JULY 1950

CCJ COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

Ask your drivers!

Why not find out what *your* drivers know about Reo's sensational Gold Comet Power. You'll see your Reo dealer *quick!*

"In 22 years, I've handled almost every make of truck. But *never* have I driven a tractor with the acceleration, speed and power of the new Reo E-22 with Gold Comet Power!" These are the sentiments of a driver now piloting a new Reo for Mushroom Transportation Co., Inc., Kennett Square, Pa.

Mushroom's vice president, William Cutaire, Jr., adds, "Our four Reo E-22RT Gold Comet-powered tractors have carried an average payload of 30,000 lbs. each—17,000 miles in ten weeks—over hilly terrain at speeds up to 65 m.p.h.—and have consistently averaged 6 m.p.g. With no mechanical expense either."

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REO

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DODGE TRUCKS are "Job-Rated" to cut costs!

"Job-Rated"...for low cost transportation

POWER: . . . **8** great truck engines—each "*Job-Rated*" for *PLUS* power.

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BIGGER PAYLOADS: . . . carry more without overloading axles or springs because of "*Job-Rated*" *WEIGHT DISTRIBUTION*.

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COMFORT: . . . widest seats . . . windshield with best vision of any popular truck. Air-cushioned, adjustable "chair-height" seats.

SAFETY: . . . finest truck brakes in the industry . . . hand brake operating *independently* on propeller shaft on *all* models—½-ton and up.

Yes, you'll save plenty on overhauls with a truck that fits your job—a Dodge "*Job-Rated*" truck.

Your Dodge truck will have an engine that's "*Job-Rated*" to "stand up and take it." You'll have power to spare—top gas and oil economy, too! And remember . . . the other name for Dodge is DEPENDABILITY!

But that's not all! Take a look at the list of Dodge truck advantages at left. Then, ask your Dodge dealer to give you the whole "*Job-Rated*" story.

Before you buy *any* truck, see how much more you get for what you pay in a truck that's "Job-Rated" to fit your job!

With all their extra value **DODGE "Job-Rated" TRUCKS** are priced with the lowest

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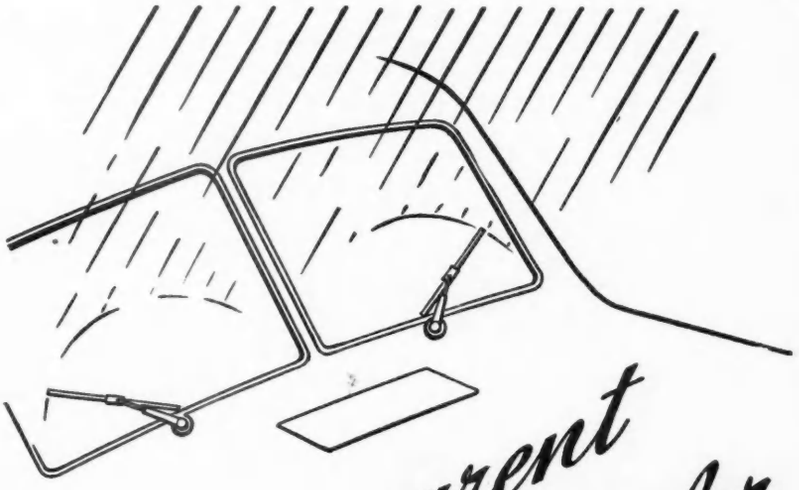

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Makes windshields leak-proof to rain or snow. Always is crystal clear, colorless and pliable.

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COMMERCIAL CAR

Vol. LXXIX Philadelphia, July, 1950 No. 5

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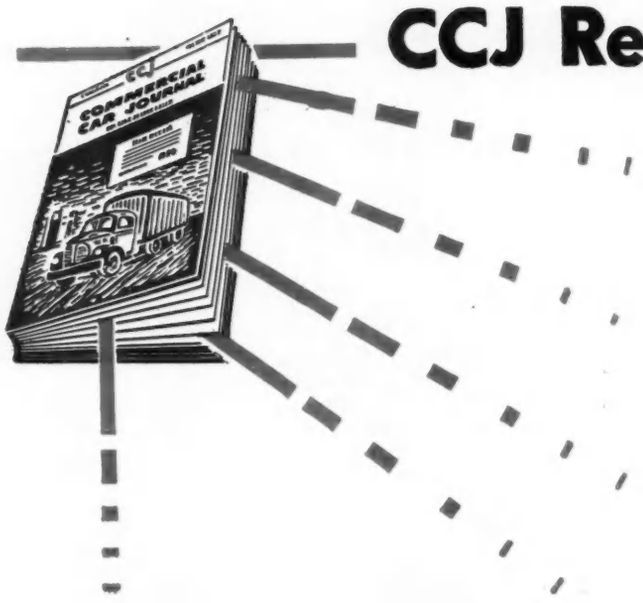

A Shop for "Desire"

This month we've used a king-sized three-dimensional drawing to tell the story of New Orleans Public Service's king-sized overhaul shop. Included are details on how engines and components for 634 trucks and buses are routed in a streamlined work flow with plenty of material handling equipment. Story begins on Page 51.

How Capital Slashed Maintenance Costs

Declining revenues, increased operating costs and a staggering financial blow forced Capital Transit Co., Washington, D. C., to resort to drastic economy measures to survive. While this shows what had to be done under these extreme conditions, there are many ideas that can be employed by equipment and maintenance superintendents everywhere—such as Capital's carburetor maintenance program, which is keyed to save $250,000 annually on gasoline costs alone. See Page 58.

Maryland Road Test Gets Underway

A history-making test is taking place on an excellent 1-1 mile stretch of a 9-year-old concrete highway, Route 301, below La Plata in southern Maryland. Eight new trucks of four gvw categories are rolling day and night in a highly scientific test to determine what effect trucks, especially the heavy ones, have on the nation's highways. The eyes of the truck transportation industry are focused on this spot. So are the legislatures of the various states. There is much at stake. For the details of the test procedures, types of vehicles and map of the location, see Page 54.

JOURNAL

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SAE Spring Meeting

The SAE Spring Meeting brought forth some interesting papers on engine wear, automatic transmissions, vehicle performance, while round table events and prepared discussions covered such subjects as engine, valve, piston ring and tire wear. Truck leasing, too, got a thorough going over by fleetmen and leasing representatves. Highlights of the French Lick confab are reviewed, Pages 69, 70 & 71.

Teletype Expedites Cargo Movement

Fleet operators are using modern business aids to cut costs and improve efficiency. Melvin Trucking tells how the use of teletype has profited its operation. In the matter of cutting costs, alone, its long distance 'phone bill was cut 50 per cent. See Page 62.

Driver Retraining Cuts Accidents 46%

There are few places in the world where the accident potential is greater than in New York City. It takes top safety skill and methods to keep a fleet's accident rate low. The author, one of the leading experts in the business, describes a program that has achieved outstanding success. See Page 76.

St.Paul
extra heavy duty...
...and then some

This 10 cubic yard semi-trailer dump body is one of seven St.Paul Units hauling rock on a 30-mile round trip (75-minute cycle) at Harlan Dam, Nebraska. The trucks work 16 to 20 hours per day six days per week traveling over an improved dirt road with electric eyes controlling traffic at 90 degree turns.

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Whether you need a special body like this or a standard dump truck unit, put in a call to your St.Paul Distributor. He's a dump unit specialist . . . and ready to serve you!

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In wheel bearings, you get this same cost-saving protection by using *Texaco Marfak Heavy Duty.* Bearings last longer . . . and its self-sealing property assures safer braking. No seasonal change is required.

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Upkeep costs for engines – heavy-duty gasoline or Diesel – come down when you lubricate with *Texaco D-303 Motor Oil.* It cleans as it lubricates . . . helps reduce fuel consumption.

Find out how Texaco top-quality lubricants and Texaco Lubrication Engineering Service can help you reduce operating costs.

Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

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MORE THAN 350 MILLION POUNDS OF MARFAK HAVE BEEN SOLD!

Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

CONFERENCE CORNER

PRESENTING FACTORY ENGINEERS' VIEWS ON TIMELY SUBJECTS OF INTEREST TO FLEETS

Subject: Torque Converters
Question: Are They Practical for Trucks?

Mr. T. Bachus, vice president in charge of engineering, Fuller Mfg. Co., lists advantages and present day shortcomings of hydraulic converters as applied to commercial vehicles. These comments were taken from an SAE paper

SINCE hydraulic torque converters are becoming fashionable, let's see how they would meet our requirements. If closely spaced steps are desirable, the torque converter is the optimum in this respect, with its infinite range of ratios. However, let's remember that one of the reasons why close spacing of ratios was demanded was to enable the driver to utilize the horsepower of the engine to the greatest possible extent. The infinite selection of ratios available in the torque converter must be paid for in loss of efficiency. The efficiency of the torque converter is so poor, as a matter of fact, that in all automotive applications the converter is cut out at high engine speeds either by a straight-through mechanical connection or by mounting the reaction member in such a manner that it is free to rotate in a forward direction when the peak of efficiency of the converter has been passed as the engine speed is increased. This allows the unit to act as a coupling with increasing efficiency as engine speed increases. In this manner, a peak in excess of 95 per cent efficiency can be attained.

In analyzing this problem in relation to torque converters currently used, we must consider not only the efficiency losses in the converter, however, but also the fact that we must lose several hundred rpm before we drop down into the torque multiplication range. As a typical example, let us take a commonly used engine with a top speed of 2100 rpm. A torque converter of the converter coupling type used with this engine has a conversion point of 1650 rpm, at which point it delivers a torque multiplication of 1.5 to 1 at an efficiency of 85 per cent, resulting in a runner speed of 935 rpm as compared to 1400 if a geared reduction of 1.5/1 were employed instead of the hydraulic drive. In other words, whatever drop in rpm from peak running speed is required to go into the conversion range, that must be added to the efficiency loss of the converter in making our comparison between hydraulic drive and mechanical conversion of torque, assuming of course that the torque delivered at peak running speed multiplied by the reduction in question is sufficient to overcome rolling resistance.

On the other side of the picture, we find some distinct advantages for the hydraulic drive. The improvement in maneuverability is very noticeable since the vehicle can be slowed to a complete stop and still retain driving torque on the wheels, which can be increased or decreased at the will of the driver solely by the use of the accelerator. Reduction in effort on the part of the driver is another important factor in favor of torque converters, since no shifting is necessary within the range of multiplication through which the torque converter is to be used.

Let's see how the torque converter fits the requirements we have set up. Can it provide the peak speed required and the maximum torque multiplication? A single-stage converter delivers about 3 to 1 torque multiplication at stall, a 3-stage converter between 5 and 6 to 1 at stall or at zero efficiency. Since overall ranges of ratio in the order of 9 to 1 to 12 to 1 are ordinarily required of transmissions for West Coast service, it is obvious that the converter alone cannot meet this requirement. The converter then cannot replace the geared transmission in such equipment but can only supplement it. Owing to the inefficiency of the converter, it is equally apparent that we would not want to negotiate a 6 per cent grade requiring a torque multiplication ahead of the axle of 3 to 1, using the converter to deliver that torque at an efficiency of about 75 per cent.

While the efficiency improves at smaller torque multiplications, the loss in rpm before any multiplication can be obtained makes the effective over-all

(TURN TO PAGE 10, PLEASE)

cutting
MILEAGE COSTS

Money cannot buy a better spark plug...

Fleet owners coast to coast report the new Auto-Lite Transport Spark Plug is helping to cut mileage costs. Install this great plug in your fleet and get best performance, longer plug life, outstanding advantages like:

- **AIRCRAFT TYPE INSULATOR**—offers maximum resistance to heat and reduces fouling.
- **HEAVY ELECTRODES**—give longer gap life which contributes to lower service costs by requiring regapping less often.
- **RUGGED CONSTRUCTION**—especially suitable for the most severe bus and truck operation.

There is an Auto-Lite Field Engineer in your territory. He will gladly help you get best spark plug and engine performance for lowest mileage costs. For an appointment with him, see your supplier or write to

THE ELECTRIC AUTO-LITE COMPANY

Toronto, Ontario — *Merchandising Division* — Toledo 1, Ohio

TRANSPORT SPARK PLUGS

Conference Corner

Continued from Page 6

performance so poor as to render the use of the converter undesirable, even for small torque multiplication, except momentarily, as in bringing the vehicle up to speed while starting or for use in maneuvering around docks. The converter is of little help on ice, since reduction in speed of the runner relative to the impeller is dependent on the load on the runner or driven member of the converter. If the wheels can be slipped on ice by the engine torque, the desired differential in speed cannot be maintained. This introduces a lack of control of wheel speed, which could be extremely dangerous.

Summing up, we find that the only ratio or ratios we can eliminate are those used in starting the vehicle in motion.

Can the elimination of the starting ratio be used advantageously to decrease the overall range of shiftable gears required? In some types of work, perhaps, but not in West Coast freight hauling as the problem now stands. Why? Because to provide the geared ratios necessary to meet all operating conditions except starting, we would still need both a 4- or 5-speed unit mounted transmission and an auxiliary.

To gain this simplification of the shift, we have added about 700 lb to the weight of the vehicle, plus the cost of the torque converter, which is considerably higher than the cost of the geared units, which do all the work except starting. Torque converters are not light and they are not cheap. I can hardly conceive of some of my West Coast friends, who use aluminum extensively for weight reduction, buying such a combination.

There are, however, operators in and adjacent to large cities, who, due to the number of stops their trucks have to make, could use the hydraulic torque converter in combination with a geared transmission to fill a long-felt need and practically eliminate one of the worst of the maintenance problems in such operations, due to excessive clutch wear.

Perhaps we would be justified in stating that the value of the torque converter is directly proportional to the number of starts made.

In multistart operations, a torque converter followed by a clutch and a geared transmission with a sufficient number of ratios to meet operating requirements adequately should provide the ability to start and to maneuver in traffic with a minimum of effort on the driver's part and a very real reduction in maintenance problems, due to the fact that the clutch no longer has to pick up the load from a standing start, and due to the fact that some shifts are not necessary.

A problem in driver training will immediately become apparent. Having learned through years of experience that he must accelerate the engine before dropping in the clutch when starting the vehicle, it will take some time for him to get used to reversing the procedure and to accelerate only after the clutch is engaged. In the meantime, what happens? When the engine is accelerated with the clutch disengaged, there is no torque multiplication through the converter because there is no load on the runner to cause a differential in speed between runner and impeller. As the clutch is engaged, the runner is pulled down in speed, with a resultant increase in torque to the clutch, until sufficient torque is developed to move the vehicle. It should be noted that we cannot get the maximum stall torque multiplication until the runner is at zero speed, at which time there can be no slippage on the clutch. At anything above zero speed, the increased load will be transmitted to the clutch at a corresponding decrease in speed.

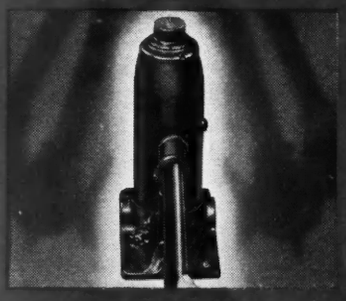
In addition to frequent start operations there are, of course, many off-the-highway operations where a torque converter in combination with several geared speeds may serve a useful purpose in starting the load and even in meeting the momentary increase in torque requirements caused by a change in grade or other factors affecting rolling resistance. We could point out, however, that here again the torque converter does not replace—it only supplements—the geared transmission, except in rear special cases.

Returning again to the problem of transmissions for high-speed over-the-highway transportation, as contrasted to city delivery, and applying our theorem that the value of the torque converter is directly proportional to the number of starts made, we find that we cannot justify its use in such operations because we do not make enough starts and therefore do not use the torque converter enough to warrant the increased initial cost and the loss in revenue that would result by replacing several hundred pounds of payload with torque converter.

Antar the Mighty Hauls 80 Tons with 250 H. P. Engine

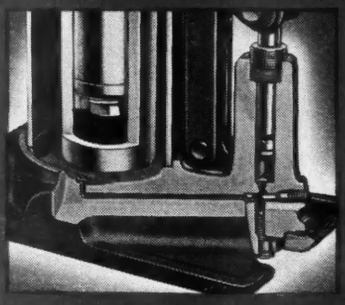
Claimed to be the biggest vehicle ever produced in England, this Thornycroft Mighty Antar 6 x 4 tractor with 34-ft trailer makes up a vehicle 65 ft 8 in. long and will carry up to 80 tons under desert conditions and at altitudes over 3000 ft. Designed for a pipe laying project in the Middle East this monster uses a Rover-built Meteorite engine with a transmission system which embodies a 3-speed auxiliary gear box in combination with a main 4-speed unit and worm and epicyclic double-reduction driving axles. The 8-cylinder oil engine has a capacity of 18 litres, develops 250 hp at a governed speed of 2000 rpm

SAVE TIME



Positioning is fast and easy. With handle socket on center line, well above center of gravity, a "900" automatically "Pendulum Balances" to upright position.

SAVE TROUBLE



Smooth, dependable, trouble-free operation is guaranteed by "Ryth-matic" action of the simple yet scientific valve design used in all "Series 900" jacks.

SAVE WORRY

"Micro-Accurate" Safety Release enables you to operate from a position well out of danger and lower any load, easily and safely, at any desired speed.

6 models from 1½ to 12 tons capacity. Two heavy-duty jacks, 30 and 50 tons.

WITH THE NEW, IMPROVED

WALKER "Series 900"

PORTABLE HYDRAULIC JACKS

FEATURING THE NEW "PROJECTILE TANK"

Try the tool box jack from any of your vehicles. Can you "position" it in a hurry? Will it lift easily and quickly? Once up, will it hold? Are you safe when you lower it?

With Walker "Series 900's" the answer is always, YES. They're engineered to bounce around in tool boxes—unused for weeks and months—yet ever ready to give you a "lift" the instant you need it. In them are more than 40 years of jack building "know-how."

Save time, save trouble, save worry—with a Walker "Series 900" in the tool box of every vehicle.

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RACINE, WISCONSIN

GET IT FROM YOUR JOBBER

WALKER *leads in* JACKS

WALKER JACKS, ELECTRIC LIFTS, EXHAUST SILENCERS AND OIL FILTERS

SERVICE NOTES

Briefed for Fleets From Manufacturers' Bulletins

● Chevrolet ●

Positive Crankcase Ventilation

A positive crankcase ventilation unit service package has been released for use on all 1949 and 1950 models except Forward Control and COE models.

This unit is recommended for all types of operation which are particularly conducive to sludging of the engine, especially with regards to the slow speed multiple stop delivery service or where units are running almost continuously under dust conditions.

This service package will be available under part No. 3693661 and will include complete installation instructions which show how to properly install.

Rochester Carburetors

Three Rochester Carburetors have been released for field service use on all passenger cars and trucks, 1932 to 1950 inclusive, except COE and Forward Control models.

Part No. 7002540 is for use on the 216 engine, 1937 to 1940 inclusive, while part No. 7002051 is available for the 235 engine, 1950 model.

● IHC ●

Ignition Changes

The possibility of the battery cable contacting the exhaust pipe, with resultant chafing and eventual shorting on L-170 to L-184 models has been overcome by shortening the cable from 26 to 23 in. and forming the terminal on the starting motor end of the cable at an angle.

Production L-line chassis are now being equipped with a fibre insulator positioned over the two ammeter terminal posts in order to safeguard against possible short circuits between the terminal wires and ammeter. The change required the addition of two extra palnuts for mounting the insulator.

Reverse Idler Gear

An improvement has been made to the model T93 transmission in that the reverse idler gear employs needle or roller bearings instead of a bronze bushing in order to eliminate the possibility of slipping out of reverse gear in severe service.

In addition to the foregoing change the reverse idler gear shifting shoe has been changed to overcome the excessive overshifting which may be objectionable. The new gear assembly is interchangeable with the old providing the new shifting shoe is used.

● Plymouth ●

Water Pump Shaft End Play

Excessive end-play of the water pump shaft may cause an intermittent metallic rattle which disappears when the fan belt is removed. This noise can be confused with air cleaner rattle.

The water pump shaft should have .0005 to .005 in. end-play (.003 in. preferred) and may be checked with a feeler gage. In order to reduce end-play, remove the hub and reposition it at 90 deg on the shaft. Drill a new hole in the shaft and hub for the retaining pin to allow for the necessary end-play.

Solenoid Trouble

If the solenoid switch will not operate, condensation may be taking place inside the switch and freezing. Should this occur, remove the solenoid and heat at 212 to 300 deg F for one hour to thoroughly dry out any moisture. Before replacing the solenoid, seal the cap with a good metal adhesive sealer to prevent re-entry of moisture.

● Studebaker ●

Spring Clip Plate

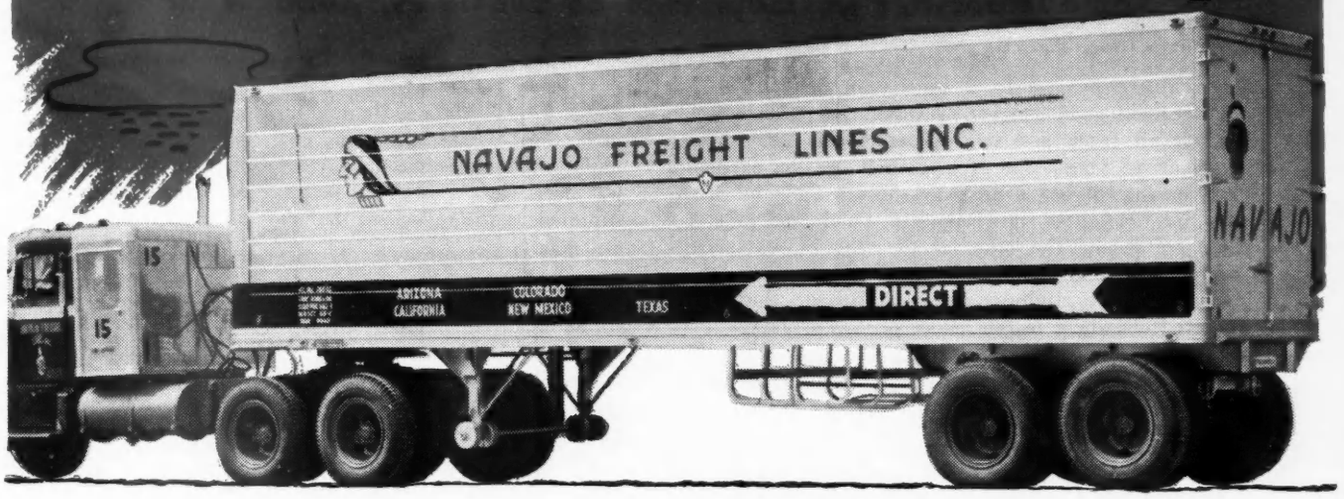
A design revision has been made in part Nos. 675998 and 676030 rear spring clip plates which permits the spring U-bolt nuts to be tightened to 180-190 ft lbs instead of 80-90 ft lbs as formerly specified for the 2R15, 2R16A, 2R17A.

Part No. 675998 plate is used on round axle housings on 2R15 and 2R16A and the part No. 676030 is used on the 2R16A and 2R17A two-speed rear axles and the 2R17A standard axle (also used on special order for 2R16A).

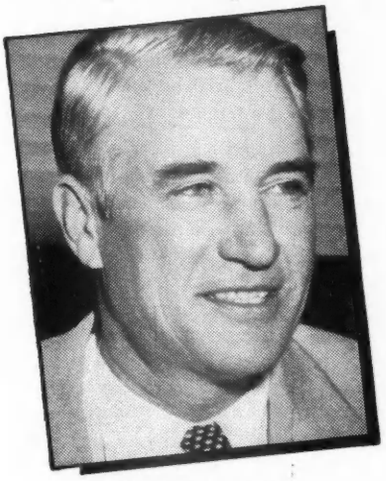
Rear Drum Change

To eliminate the possibility of sand and gravel entering openings in the 2R10 brake drums at the point where the drum is attached to the hub, these openings have been eliminated. This change became effective with Truck Serial No. R10-22204.

"Our 20 New, All-Aluminum TRAILMOBILES Will Pay For Themselves The First Year!"



"They Carry a BONUS-PAYLOAD Worth $9,500 EVERY MONTH!"



Mr. Mitchell Howe, *Pres.*
Navajo Freight Lines

● It's easy to see why so many fleet owners from coast to coast are switching to All-Aluminum TRAILMOBILES—the BONUS-PAYLOAD they carry means enough added revenue to pay for the units the first year!

As Mr. Mitchell Howe, President of the Navajo Freight Lines says, "The 20 All-Aluminum TRAILMOBILES we have in service will earn more than $100,000 in extra revenue the first year!"

After the first year this BONUS-PAYLOAD is practically BONUS PROFITS because TRAILMOBILES are engineered and built for trouble-free service for years and years. Mr. Howe says, "In nearly 100,000 miles of service we have had no maintenance problems whatever. We enthusiastically recommend TRAILMOBILES because they have given us completely satisfactory service."

Send the coupon below for the amazing TRAILMOBILE story—see how you can increase your revenue and enjoy trouble-free service with the All-Aluminum TRAILMOBILE that can pay for itself in Bonus-Payload!

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MAIL THIS COUPON NOW!

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31st & Robertson, Cincinnati 9, Ohio
I am very much interested in the new Trailmobile All-Aluminum Trailers. Please send me complete descriptive information.

*Name*_____

*Business Address*_____

*City*_____ *State*_____

*My Position*_____

The OVERLOAD

EDITORIAL COMMENT

Some Important Developments on Subsidies, Road Wear

THERE'S good news from Washington this month for all truck and bus operators. It stems from two sources. One is the progress being made, particularly on the subject of highway subsidies, by the Senate Sub-Committee on Domestic Land and Water Transportation. The other is the start of extensive highway wear tests near LaPlatta, Md., under the auspices of the Highway Research Board. Both are reported elsewhere in this issue.

After a brief moment to discuss the significance of each, we'd like a special word with the fleetman who says: "So what?—those things concern only the big over-the-highway boys!"

* * *

Readers will remember that in January (CCJ, Jan., '50, pg. 67) the Senate Sub-Committee buttoned up its initial research for basic data on all forms of transportation and opened its doors for the testimony of interested parties. The railroads were given the lead position and, as might be expected, devoted much of their time to the subsidy charge—subsidy that is to all transportation agencies save only the rails.

During the past month the truck and bus interests have had their turn. John Lawrence, Bill Bresnahan, Chester Moore and Edgar Idol of the American Trucking Assns. manned the carefully placed heavy artillery, while many others, including Jack Scott for the bus operators, handled the sharpshooter posts.

How goes the tide of battle? Front line reports remain a closely guarded Senatorial secret, but we got an inside tip the other day from the high command. It came from a member of the Senate's overall Committee on Interstate and Foreign Commerce of which Senator Francis J. Myers' (D. Pa.) task force subcommittee is a part.

Commenting on the conflicting testimony from rails and highway users on the subsidy issue, the Senator quoted some facts—highway expenditures in 1948, about $3 billion; special motor vehicle taxes in the same year, about $3.4 billion. "In other words," said the Senator, "we made a profit on the highways of about $400,000,000." He left no doubt that at least in his own mind—and because of his position a very important mind—that the facts supplied by the highway users were a whole lot better than the propaganda supplied by the rails, and that the subsidy issue is all but dead!

* * *

As the trucks roll around the clock, night and day, for an expected six months near La Plata, Md., another great issue is being resolved. Do heavy trucks accelerate highway wear, and if so, by how much? We won't have the answers to that one till the tests are finished, but then we'll have facts instead of fantasy.

Frankly, we hope the tests will show a definite increase in wear in the lanes devoted to heavy axle loads. Then the degree of increased wear can be measured and no longer will it be possible for Governors, highway officials and the railroads to quote their independently acquired and widely-diversified "facts" to "prove" any convenient point. And we'd stake a healthy share of our reputation that the increased wear will fall a long way below the one-third of *total* highway costs now paid by trucks.

* * *

Why are these developments of vital significance to *all* commercial highway users? Simply because the subsidy charge and the highway damage charge lead the list of phoney tools by which competing interests hope to increase the taxes on *all* trucks and buses. State, as well as Federal Governments, are watching the outcome, ready to pounce on tax rates (as has already been done in New Jersey) whenever the subsidy charge and highway damage charge can be made to stick.

Let us never lose sight of the fact that in the public's eye a truck is a truck and a bus is a bus. It makes not the slightest difference whether they be common carriers, contract carriers or private carriers. That's why you, Mr. Baker, Mr. Oilman, Mr. Dairyman and Mr. Every Businessman have just as much at stake as your friend the highway hauler.

Bart Rawson
Editor

CCJ REPORTS

on News of the Industry

Mack Introduces New "A" Line

On June 22 at its Allentown, Pa., plant, Mack Trucks, Inc., unveiled the first of a new series of "A" models, in the lower-weight end of its line. The event as well as the new models marked the first of a series of activities planned in conjunction with Mack's Golden Anniversary year.

Too late for a descriptive feature in this issue, it was learned in advance that the new models will cover a range from 17,000 lb gvw to 45,000 lb gcw. Design is completely new to these models but is adopted from existing designs used on the larger "L" line. Three brand new gasoline engines, made entirely in the Mack factory, will power the new units. Basic engine specifications are as follows:

Size in cu. in.	Hp @ rpm	Torque in lb-ft
290	107 @ 2800	232 @ 1400
330	122 @ 2800	264 @ 1400
337	140 @ 2800	302 @ 1400

N. Y. Amends Weight Law

A new law in New York State provides that any peace officer may stop any truck which he has reason to believe is overloaded and may cause the same to be weighed, providing the scale is not more than three miles distant from the place where he stops the vehicle. If the vehicle is overloaded, the peace officer shall cause the excess load to be removed from such vehicle immediately.

N. Y. Clamps Down on Diesel Taxes

New York has also initiated a drive for full compliance with the State's motor fuel tax law and regulations by both sellers of diesel fuel and diesel truck operators, including out-of-state truckers who operate in N. Y. These are the requirements in affect:

1. If you own one or more diesel-powered trucks which operate within New York State, you are considered a distributor under the law and are required to register each diesel truck with the State Miscellaneous Tax Bureau. There is a registration fee of 25 cents. This must be done regardless of whether you reside in N. Y. or another state.

2. You are required to report each month your Diesel fuel purchases of the previous month, at the same time paying the State tax of four cents a gal.

Diesel truck owners who fail to file returns or pay the tax on diesel fuel in compliance with the N. Y. law are subject to a penalty of 5 per cent of the tax plus 1 per cent for each month of delinquency.

(TURN TO PAGE 130, PLEASE)

DATES and DOINGS

JULY 10-14—Fleet Supervisors Training Course, Northwestern University, Evanston, Ill.

JULY 14-15—Truck-Trailer Mfrs. Assn. Second Annual Summer Meeting, Edgewater Park Hotel, Chicago, Ill.

JULY 15—Motor Transportation Assn. of S. C., Annual Convention, Cleveland Park Hotel, Greenville, S. C.

AUG. 3-5—Michigan Trucking Assn., State Rodeo, Grand Rapids, Mich.

AUG. 4-6—North Dakota Annual Convention and Rodeo, Gardner Hotel and Fair Grounds, Fargo, N. D.

AUG. 14-16—Society of Automobile Engineers (West Coast Meeting), Biltmore Hotel, Los Angeles, Calif.

AUG. 19—New Mexico Motor Carriers Assn. Truck Rodeo, Albuquerque, N. M.

SEPT. 4-6—Mississippi Transport Assn., Inc., Annual Convention, Buena Vista Hotel, Biloxi, Miss.

SEPT. 8-9—Kansas Motor Carrier Assn., Annual Convention, Broadview Hotel, Wichita, Kan.

SEPT. 8-9—North Carolina Motor Carrier Assn., Annual Convention, Mayview Manor Hotel, Blowing Rock, N. C.

SEPT. 8-9—West Virginia Motor Truck Assn., Annual Convention, Hotel Waldo, Clarksburg, W. Va.

SEPT. 11-15—Fleet Supervisors Training Course, Penn State College, State College, Penna.

SEPT. 11-15—Fleet Supervisors Training Course, Purdue University, Lafayette, Ind.

SEPT. 11-12—Wisconsin Motor Carriers Assn., Annual Convention, Lake Lawn Resort, Delevan, Wis.

SEPT. 11-14—American Assn. Motor Vehicle Administration, Annual Meeting, Multononah Hotel, Portland, Ore.

SEPT. 12-14—Society of Automotive Engineers, Hotel Schroeder, Milwaukee, Wis.

SEPT. 13-14—Tennessee Motor Transport Assn., Annual Convention, Andrew Jackson Hotel, Nashville, Tenn.

SEPT. 13-15—National Assn. Motor Bus Operators, Annual Meeting, Drake Hotel, Chicago, Ill.

SEPT. 14-16—Virginia Highway Users Assn., Annual Convention, Hotel Chamberlain, Old Point Comfort, Va.

SEPT. 15-16—Michigan Trucking Assn., Annual Convention, Park Place Hotel, Traverse City, Mich.

SEPT. 16—Massachusetts Motor Truck Assn., Inc., Annual Convention, New Ocean House, Swampscott, Mass.

SEPT. 18-22—Fleet Supervisors Training Course, Ohio State University, Columbus, Ohio.

SEPT. 25-27—American Transit Assn., 69th Annual Convention, Biltmore Hotel, Los Angeles, Calif.

SEPT. 25-27—National Truck Body Mfrs. and Distributors Assn., Annual Exhibit and Convention, Shoreha mHotel, Washington, D. C.

SEPT. 25-29—Fleet Supervisors Training Course, University of Kansas (Ext.), Wichita, Kan.

OCT. 2-6—American Trucking Assn., Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

OCT. 9-13—Fleet Supervisors Training Course, University of Minnesota, Minneapolis, Minn.

OCT. 16-18—Society of Automotive Engineers (Transport Meeting), Hotel Statler, New York, N. Y.

OCT. 20-21—Indiana Motor Truck Assn., Annual Convention, French Lick Springs Hotel, French Lick, Ind.

OCT. 24—Motor Transportation Assn. of Connecticut, Annual Convention, Bond Hotel, Hartford, Conn.

DEC. 4-8—Automotive Service Industries Show, Navy Pier, Chicago.

RAMCO's PATENTED INNER-RING

Stops "ROCKING CHAIR Action"!

- **reduce wear**
- **save oil and gas**
- **increase pep and power**

through Ramco Piston Stabilization!

PISTON RINGS MAY LOOK ALIKE*

. . . but there is a *big difference* in ring *performance,* as these Ramco 10-Up features illustrate! Over 57 exclusive Ramco 10-Up features, like the continuous steel Spiro-Seal Ring, the stabilizing Inner-Ring and the "Double-Life" Principle *pay-off* in longer ring and cylinder life, lower maintenance costs and increased gas and oil mileage. A Ramco Representative will explain how Ramco 10-Up Heavy-Duty Piston Rings revise the old ideas about expander-type rings and Re-Boring. He will also arrange for a test installation. Write:

RAMSEY CORPORATION, St. Louis 8, Missouri

* *RE-POWER WITH*

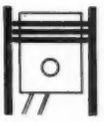
RAMCO 10 up

HEAVY-DUTY PISTON RINGS

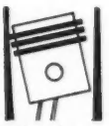
. . . ESPECIALLY DESIGNED FOR FLEET INSTALLATIONS . . . FOR RE-RING OR RE-BORE!

R4011CC

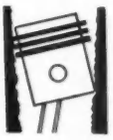
here's how it works!



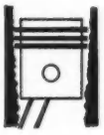
WHEN THE ENGINE IS NEW — Cylinders are perfectly round, rings contact cylinder walls and pistons perfectly. Compression and oil are correctly controlled and pistons ride perfectly centered in the cylinders.



BUT . . . WHEN THE ENGINE IS WORN — things are different. Cylinder walls are worn and slightly enlarged, rings are worn and so are pistons. When pistons start to rock, cylinder wear increases and rocking increases, setting up a vicious circle.

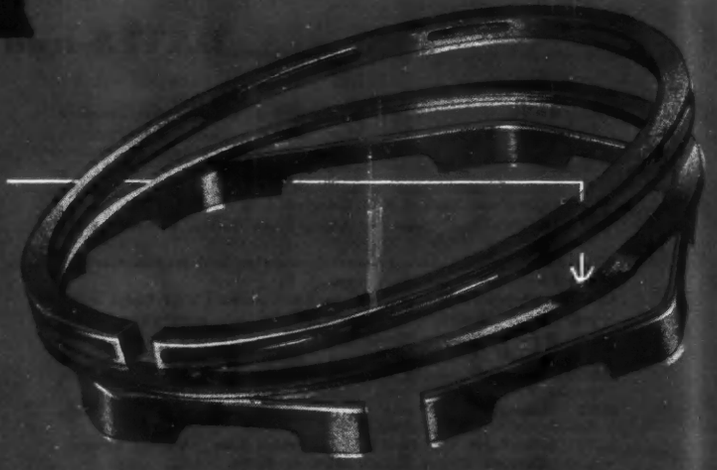


"ROCKING CHAIR ACTION" CAUSES THIS! If an engine is allowed to operate in this condition for any length of time, the rocking action of the pistons may gouge and scar the cylinder walls and barrel edges of rings. This causes compression and oil loss and a resulting lack of pep and power.



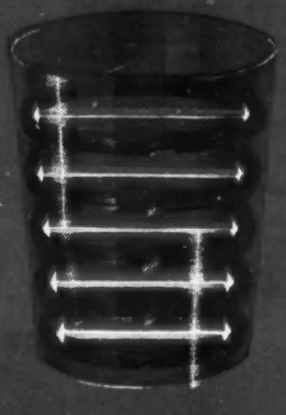
THE INNER-RING REDUCES "ROCKING CHAIR ACTION"! When Ramco 10-Up Rings are installed, the scientifically designed Inner-Ring exerts just the right amount of stabilizing effect on piston ring assembly assuring full contact with cylinder walls. At the same time, the Inner-Rings grip pistons centrally at seven points, making pistons ride perfectly centered in cylinders.

These are important reasons for Fleet Operators' Success with RAMCO 10-Up Heavy-Duty Rings!



SPIRO-SEAL the CONTINUOUS STEEL RING

"Bridges-the-Gap" to seal against blow-by. SPIRO-SEAL automatically adjusts to tapered cylinders. Never exerts harsh pressures! It maintains power in badly worn cylinders or in those in fair condition at all times because it is GAPLESS!



ALTERNATING PRESSURE ACTION

Provides EXTRA PRESSURE on the downstroke, where it is required to control oil and blow-by . . . and LOWER PRESSURE on the upstroke, where it is necessary for proper lubrication. The drinking glass illustrates the principle.

EXCLUSIVE "DOUBLE-LIFE" PRINCIPLE

First Life: During the break-in period, the inner ring exerts its gentle pressure ONLY on the cast-iron oil ring. The "endless" Spiro-Seal Ring functions under its own easy tension, adapting to the cylinder's shape.

Second Life: When wear occurs, the inner ring contacts BOTH the cast-iron ring and the Spiro-Seal Ring with a gentle pressure that compensates for wear. The bearing surfaces thus retain full contact with the cylinder wall to seal against blow-by and properly control lubrication.

CCJ REPORTS

DETROIT DISPATCH

by LEN WESTRATE Detroit News Editor

Spoke Wheels for Ford

About the first of August Ford will make cast spoke wheels standard on its F-7 and F-8 models. The wheels have been in demand by operators because they are interchangeable with wheels on trailers. Disc wheels will remain optional equipment at no extra charge. Ford also at about the same time will offer an additional optional two-speed gear ratio on its F-6 model of 6.33/8.87 to 1. The company also reports that the 254 cu. in. six-cylinder engine offered as optional equipment on the F-6 line is proving very popular with about half of the F-6's sold carrying the engine, which turns up 110 horsepower.

Fantasy on the Green

Employes of one of the oldest and most respected truck builders have been chasing women—and of all things, with a lawnmower. Before we get sued for libel, we hasten to explain that Reo, which builds lawnmowers as well as trucks, has developed a remotely controlled power mower on a strictly experimental basis. While demonstrating it on a golf course near Lansing recently, the operators hid behind a clump of bushes and sent the mower chugging around behind a couple of women golfers much to their consternation and dismay. It was all a gag, however, and the women took it as good sports. The mower is controlled through a series of electronic controls similar to a "walkie-talkie" with the operator merely punching buttons to start, steer, and stop the device. Since it probably would cost from $800 to $900 to the customer, it probably will not be put into any kind of volume production.

Tire Price Factors

Some spokesman for the tire industry hint that the recent price increases on tires and tubes may not be the last before the Summer is over. However, the recent skid in the price of natural rubber may take the pressure off the manufacturers a bit so that another price hike may be avoided. Fleet operators have been particularly vulnerable to price increases traced to the kiting cost of natural rubber because all large truck tires and nearly all truck tubes are made of crude rubber.

Smaller Diesels Pose Problems

We hear considerable talk these days about the possibilities in the next two or three years of much smaller diesel powered trucks than now are available. Cummins, incidentally, has a new 150 horsepower diesel engine in the hands of several manufacturers for testing. One of the leading truck manufacturers says the problem of introducing a smaller diesel is complicated by the driving and servicing requirements of diesel operation because gear ratio selection in relation to engine speed is much more important than with a gasoline engine, together with more strict maintenance requirements, particularly in respect to cleanliness in fuel handling. In small sizes the trucks would fall into the hands of one-truck operators, such as farmers or draymen, who do not appreciate the complex requirements of diesel operation and maintenance training in order to get as wide as possible understanding of the diesel problems among truck operators and service establishments.

Heavier Oil Recommended

Dodge has revised its oil specifications for both passenger cars and trucks toward heavier grades. Specifications now call for SAE No. 30 for new Dodge cars and trucks at temperatures above 32 degrees. The previous recommendation was SAE No. 20. So far none of the other truck companies queried have indicated any inclination to change previous oil specifications.

Model Clarification

Truck model designations for the most part are not too intelligible to many fleet operators. They often include a basic model number and then are thoroughly hashed up with other symbols for various options and in some cases options are available without being designated. One of the larger truck companies is thoroughly overhauling its model designations and later this year will come out with an entirely new system of identification. It is understood that it will have a basic number for the model series followed by standard designations indicating the engine used, wheelbase, axle, whether gas or diesel, and so forth. Operators then will only have to become familiar with one set of facts to tell exactly what the model designation covers.

Heavy-Duty Sales Up

While all truck sales are very good, there has been a steady upward trend in the heavy duty models. There is a very definite replacement need in that category and the confidence that operators are indicating in the economy of the country has resulted in a very good replacement demand for the big jobs. Another reason given by the heavy duty truck manufacturers are that many operators who after the war bought lighter trucks on a price basis found that they did not quite fill the bill for their particular operations and are going back to trucks engineered for extra heavy duty use.

(TURN TO PAGE 176, PLEASE)

Weatherproof - Moistureproof

HOLLEY Hot Spark COILS

MORE VOLTAGE . . . MORE POWER . . . MORE ECONOMY

YES! More VOLTAGE—because of more windings in secondary circuit . . . More POWER—because of greater voltage and no possible chance for leakage or short circuits . . . More ECONOMY—because a fatter, hotter spark is delivered to speed up the flame front of the explosive mixture and step up its power thrust.

The Holley Coil is new and exclusive in design—completely waterproof and weatherproof, with windings sealed in a special oil to prevent short circuit breakdowns or exposure to moisture. You'll be amazed at its ability to improve the performance of a slightly sluggish motor. Wire leading to distributor is likewise sealed in to insure complete moistureproof construction.

Brackets available for installation on any make car or truck.

For **TRUCK AND CAR ENGINES • MARINE ENGINES • TRACTOR • STAND-BY AND LIGHTING PLANT ENGINES IN 6 AND 12 VOLT SIZES •**

HOLLEY *Carburetor Co.*

5930 VANCOUVER AVE., DETROIT 8, MICH.

AUTOMOTIVE EQUIPMENT AND ACCESSORIES

CCJ REPORTS

WASHINGTON RUNAROUND

by GENE HARDY Washington Correspondent

Senate Inquiry Hears Truck Side

For the past month, highway user interests have been presenting their side of the picture before the Senate Sub-committee on Domestic Land and Water Transportation. In large measure their comments have been directed with telling effect (see editorial on page 20) at the railroad testimony which had gone before (CCJ July, page 35). Said ATA's Bill Bresnahan: "There is a railroad problem . . . and it has a solution, but the solution does not lie in punitive taxation and arbitrary regulation of competing agencies."

Also introduced were problems within the trucking industry including pleas for revision of Sec. 203 (b) (6) of the Interstate Commerce Act which exempts fish, livestock and agricultural commodities from most ICC regulations. Although intended as a relief for farmers in getting their products to market, the act has been interpreted to include such items as frozen fish and fruit juices, cured tobacco leaves and processed meats, producing definite hardship for the certificated carriers. . . . The problems of current leasing practices also got a thorough going over.

Whether the lengthy hearings will result in legislation or any other tangible effects appears to depend more and more on whether the subcommittee chairman, Sen. Myers, Dem., Pa., is re-elected this fall. Sen. Myers' opponent is Pennsylvania's Governor Duff. A Myers defeat, which is highly possible, would have a substantial effect on the subcommittee work since at most of the lengthy hearings he has been the only Senator present. The only thing that might save the committee's work is that Sen. Johnson, Dem., Colo., chairman of the full Senate Commerce Committee is also a member of the sub-committee. In any case, new legislation will have to be pushed through the Senate, as all such investigations automatically die at the end of a Congress.

Basing Point Bill Vetoed

That windfall of business brought to truckers by the Supreme Court's decisions to outlaw freight absorption seems destined to continue—at least for a time. President Truman's veto of legislation which would have permitted a limited return to "basing point" pricing methods means that there is little chance for Congress to act again on the subject until next year.

A few days before Mr. Truman announced his decision to veto the so-called basing-point bill, the FTC announced in connection with a complaint against manufacturers of corn products that the use of basing points and zone systems of pricing were unlawful "only when such systems involve concerted action, conspiracy, or unlawful agreements among sellers."

Gasoline Price Probe

The Senate Judiciary Committee is getting ready to probe into what is termed "constantly advancing" gasoline prices. The resolution authorizing the investigation was sponsored by Senators Ferguson, Rep., Mich., and O'Mahoney, Dem., Wyo. The probe will probably make a big splash up until the Congressional elections in November, since such investigations are always popular vote-getters. Sen. Ferguson was on the spot, as Gov. Williams, Fair-Dealer from his home state of Michigan, was threatening a State probe. In introducing the resolution, Ferguson made much of "10 price increases in Detroit in the past 4 years." The investigation is to determine whether there has been unlawful manipulation of gasoline prices and whether legislative remedies are needed. A report is due by the end of the year.

Excise Tax Cut Clears House

The final vote of approval by the House of Representatives late in June of excise reductions totalling $1.1 billion—including $165 million less annually in transportation taxes and $67 million less each year in excises on tires, tubes, and parts—represents a hard-won victory for the trucking and automotive trades in their efforts to "jar loose" the 6-month-old revenue bill from threatened political oblivion.

The hotly-contested bill, which now contains provision for raising $433 million in new corporation taxes plus other revenue-raisers in order to make it acceptable to President Truman, is now in the hands of the Senate. Tax leaders in the upper chamber claim they will need "at least several weeks" of hearings on the measure, but cloakroom talk indicates that the bill may receive final approval on the floor of the Senate as early as the first week in August if the tax-writing solons can be goaded into action.

Under the provisions of the House-passed bill, the present tax on transportation of property is reduced from 3 per cent to 1½ per cent, and on coal from 4 cents per ton to 2 cents per ton. The tax on transportation of persons is reduced from 15 per cent to 10 per cent.

The bill also provides for the complete removal of all excises on rebuilt, reconditioned, and repaired automobile parts and accessories. It reduces excises on tires from 5 to 3¾ cents per pound; on tubes from 9 to 6¾ cents per pound; and on parts and accessories from 5 per cent to 3¾ per cent. In addition, the measure provides that credit shall be allowed for tax-paid tires and tubes on automobile parts and accessories.

(TURN TO PAGE 124, PLEASE)

Every motor vehicle receiving complete Quaker State Lubrication Service is getting the finest lubrication that modern science can produce.

Quaker State Waterproof Lubricant | Quaker State EXPP2 Lubricant | Quaker State Viscous Lubricant | Quaker State Super Quadrolube | Quaker State Quadrolube | Quaker State Wheel Bearing Lubricant | Quaker State Universal Joint Lubricant

QUAKER STATE lubrication engineers produce specialized lubricants to meet the varying needs of every type of automotive equipment—lubricants especially designed for a particular purpose and which thoroughly protect each moving part.

There is no finer line of lubricants anywhere in the world, at any price.

LAUGH IT OFF

CITY DRIVER: "Does your wife do all her own washing?"

FREIGHT HANDLER: "Yeah, all except her back."

CCJ

Freight Checker: "Your wife is ugly. Why don't you send her to a beauty parlor for a mud pack?"

Freight Handler: "I did last year, and for three days she was beautiful."

Freight Checker: "Then what happened?"

Freight Handler: "The mud came off."

CCJ

The Traveling Auditor had experienced a very difficult day trying to reconcile shippers' accounts in a southern terminal operated by his company. Checking into his hotel, he hurriedly retired for the evening, but sleep wouldn't come. Everywhere from the adjoining rooms came unmistakable sounds of merriment. Finally, he could bear it no longer.

"Say," he ranted over the house phone, "how do you expect me to sleep with all this racket going on?"

"I'm sorry, sir," said the desk clerk in his most solicitous voice, "but they're holding an Elk's Convention."

"I don't care if they've got him by the antlers," roared the Auditor. "I want some sleep!"

CCJ

HE WHO LOOKETH UPON A WOMAN LOSETH A FENDER.

CCJ

Long Distance Van Driver: "I'm sorry I ran over your hen. Would two dollars be sufficient to pay for her?"

Farmer: "Better make it five. I have a rooster that was mighty fond of that hen and the shock might kill him. He's worth three dollars."

CCJ

The Traffic Rate Clerk and his gal were sitting on her couch discussing intellectual things like mental telepathy.

"Would you call it mental telepathy," his girl friend asked, "if you and I were thinking about the same thing?"

"No," smiled the Traffic Rate Clerk. "I'd call that just plain good luck."

CCJ

Policeman: "Come with me. You're drunk."

Wobbly Truck Mechanic: "Who shesh I'm drunk. Jusht becaush my eyesh are red ish no shign—for all you know, I may be a white rabbit."

F. C. Agent's Wife: "Darling, that awful woman next door has a new summer dress just like mine."

Freight Claim Agent: "Now, I suppose you want me to go out and buy you another one."

F. C. A.'s Wife: "Well, dear, it would be cheaper than moving."

CCJ

Weavin' Willie, our City Driver, had been experiencing marital difficulties and our Personnel Manager was giving him advice. Willie replied, "I know I'm not perfect, sir, but she has her falsies, too."

CCJ

Two truck drivers for a southern motor carrier became enamored of a cute little red headed waitress. One night they were quite surprised to find each other sitting on the little red head's sofa with her between them.

"You know, Joe," said the large driver to his pal, "Did you ever hear that old saying that TWO IS COMPANY AND THREE IS A CROWD?"

"Yeah, Boy, that's an old one," said the second driver. "But this gal is so darn sweet I haven't got the heart to tell her to leave."

CCJ

The Safety Director's little son, Junior, and his mother were looking through the family album. "And here," said his mother, "is your Aunt Minnie, there's Uncle Josh, and there's Grandpa."

Presently they came to a picture of a virile, handsome young man with a mustache ond a crop of wavy hair. "Who's that?" asked Junior.

"Why, that's your father!" answered his mother.

"Yeah?" said Junior skeptically. "Then who's the bald-headed guy that's been living with us?"

CCJ

STENO SUE: "SO YOU SAW ANNABELLE TODAY?"

STENO LOU: "YES; I HADN'T SEEN HER FOR TWELVE YEARS."

STENO SUE: "HAS SHE KEPT HER GIRLISH FIGURE?"

STENO LOU: "KEPT IT? SHE'S DOUBLED IT!"

CCJ

Tank Truck Driver: "See here, sister, call the proprietor at once. How do you account for the fact that I found a piece of rubber tire in the hamburger you served me a moment ago?"

Waitress in Diner: "Wise up, chum, wise up. That piece of rubber tire you found just goes to show that the motor truck is replacing the horse everywhere."

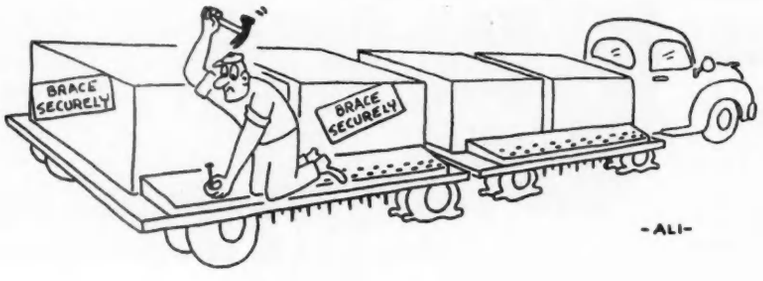
CCJ

On his nocturnal missions, the night road service mechanic for Fleety-Fleet Motor Express, would occasionally pass the farm of a country gentleman noted for his splendid watermelons. The farmer began to miss several melons two or three times each week. In an attempt to put a stop to the pilfering he erected this sign:

"DANGER! One of the watermelons in this patch is poisoned."

A few mornings later he was chagrined to find his sign replaced by one which read:

"DANGER! Two of the watermelons in this patch are poisoned."



Cummins® Custom-built Diesels

Built not once but Twice

The better-built engine for better power profits

Every lightweight high-speed Cummins Diesel is actually built *twice*. After initial assembly, each engine is run-in on the test block. Then it is torn down and carefully re-inspected — after that it is re-assembled and tested *again* to assure *peak performance*. And that is only *one* example of the extra care, the precision-workmanship . . . that goes into every Cummins custom-made engine.

That's why a Cummins Diesel is an investment that has *greater earning power* for you. The finest of engine-craftsmanship...exclusive Cummins fuel system...and custom-built engines "that fit your job" make a rugged, quality-engineered Cummins Diesel *the better buy for your power needs.*

Contact your Cummins dealer. He has more facts to show you about making more profits with

CUMMINS Dependable DIESEL

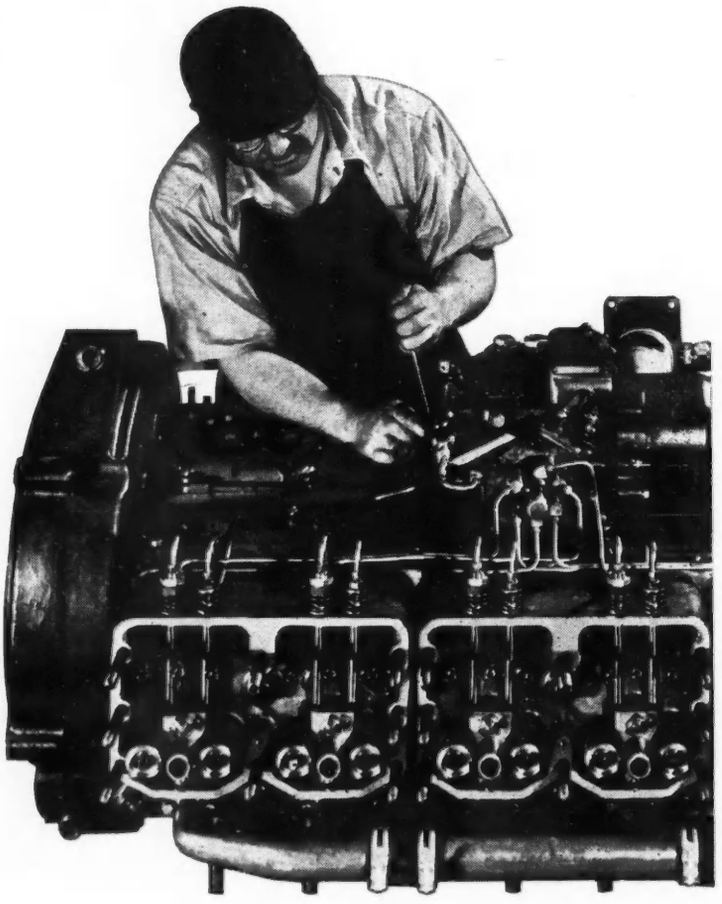
TRADEMARK REG. U. S. PAT. OFF.

Diesel power by CUMMINS

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, IND.

EXPORT: CUMMINS DIESEL EXPORT CORPORATION
Columbus, Indiana, U. S. A. • Cable: Cumdiex

Lightweight High-speed Diesel Engines (50-550 hp) for: On-highway trucks • off-highway trucks • buses • tractors • earth-movers • shovels • cranes • industrial locomotives • air compressors logging yarders and loaders • drilling rigs • centrifugal pumps generator sets and power units • work boats and pleasure craft.



New Orleans SHOP Leaves Nothing to "Desire"

By Bart Rawson
Editor, Commercial Car Journal

New Orleans Public Service handles engine and unit overhauls for 349 buses and 285 trucks in its extraordinary Dupre St. shop

THIS is a very unusual "maintenance" story for CCJ. Contrary to established and time-proved custom, it does not reproduce a single form, nor does it show photographs of shop equipment or procedures. It does not assert that by following plan "A" you can save XYZ dollars. It has no statistics on road failures, volume of stock carried or any of the other data so often found in CCJ features.

But it does portray, through the medium of the unusual and almost self-explanatory drawing on the following pages, one of the neatest, most efficient overhaul departments your editors have encountered. It does show readers what they have so often requested—full details of an unusually complete shop, replete with extensive material handling equipment, and so arranged as to permit a streamlined work flow from the moment the assembly rolls into the shop until it is tested on an electric dynamometer at the far end.

The shop is on the property of the New Orleans Public Service, Inc., and is used for all unit overhauls involved in the maintenance of some 339 White "pancake" powered buses and 10 TD-4007 GMC Diesels plus 285 of its trucks, ranging from ½-ton pick-ups to 30,000 lb gvw "line riggers."

We wish that we might have been able to use at least three colors in the reproduction of the drawing for the shop's most striking feature is the dull gray color of its machines, outlined at working edges and danger areas by brilliant strips of yellow and red. For that you will have to take our word.

But of definitely greater importance is the completeness of the shop's equipment and the streamlined arrangement of the work flow. The engine coming into the cleaning area on the fork lift truck has just been removed from its under-floor bus mounting by the fork lift. This in itself is an unusual twist made possible by the use of a twin post lift for the bus and special extension forks on the lift truck. When all connections have been removed, the fork lift moves in, supports the engine while mounting bolts are removed, then lowers it sufficiently to clear the sides of the bus.

As soon as it enters the cleaning room, the engine will be picked up by the jib crane and placed in the spray tank. The cover and the side doors are closed, and the sprays of steam solution are started. These sprays striking the engine from all sides clean the outside dirt from the complete power unit. After this cleaning, the jib crane is used again to place the engine on the breakdown platform where it is "undressed." The transmission, air

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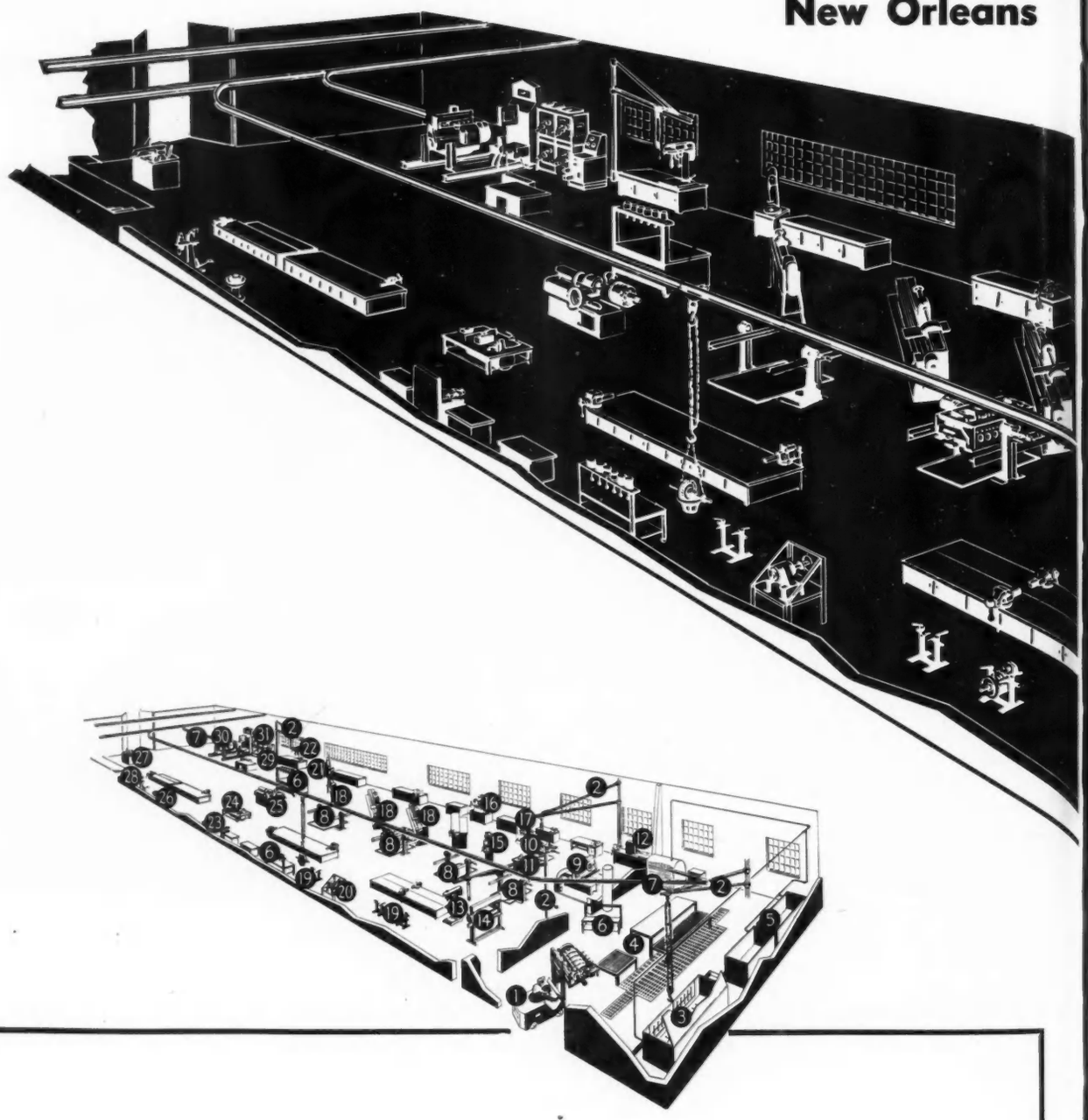
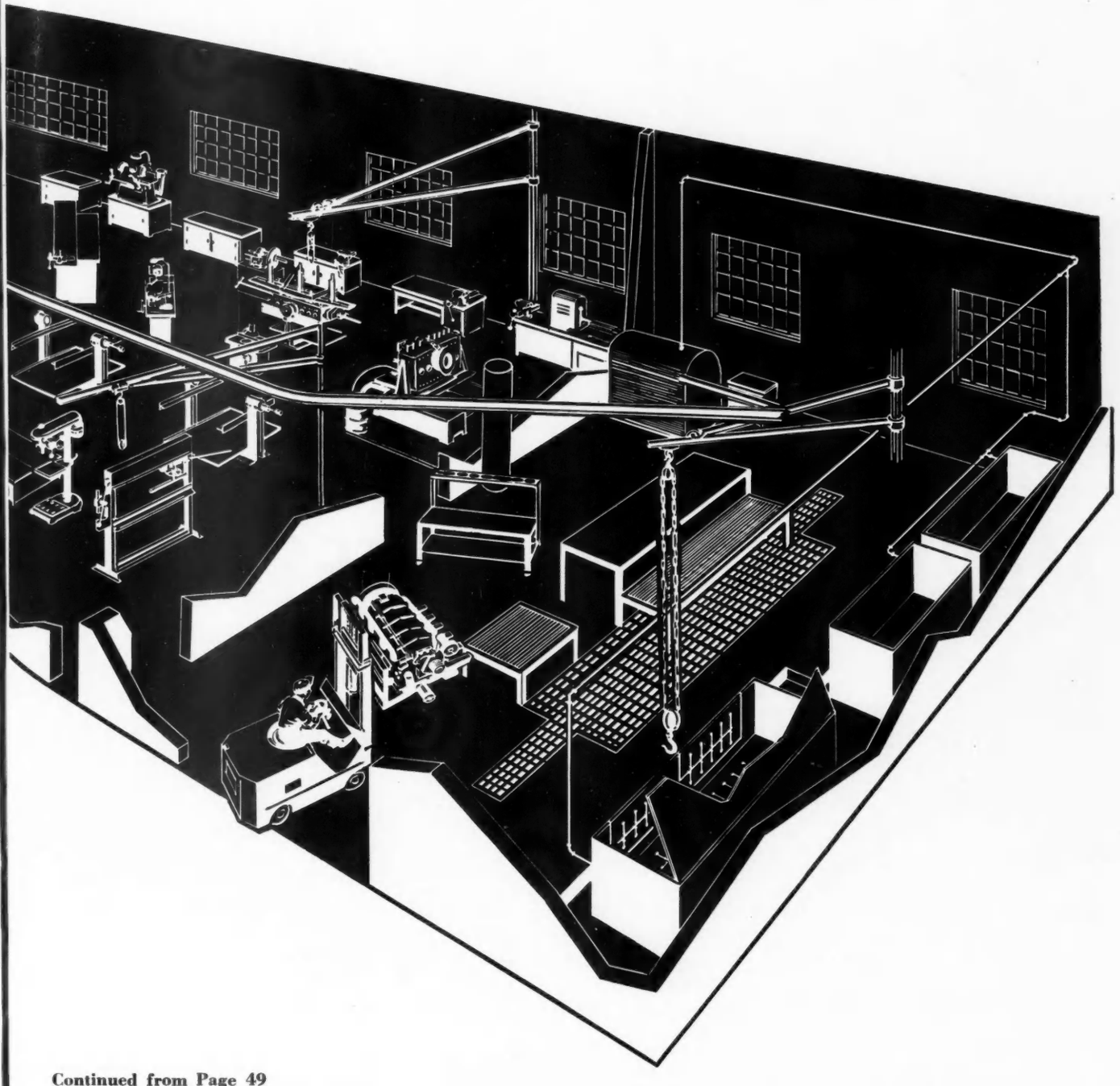


LEGEND . . .

Engine enters rebuild department on fork lift truck (1), is lifted by jib crane (2), placed in steam spray tank (3), cleaned and then disassembled on tables (4). Block and parts are further rinsed in dip tanks (5). Parts are placed on parts stand (6), and rolled to respective sections of the work area for overhaul. Block is carried by monorail (7) to engine stand (8). From here, jib crane can reach Heald cylinder grinder (9), aline bearing borer (10) and cylinder head surface grinder (11). Piston and connecting rod pin holes are reconditioned on pin hole grinder (12). Big drill press (13) can handle any large or small drilling job and hydraulic press (14) has sufficient capacity for any job including differential and transmission work. Piston grinder (15), valve grinder (16), and rod boring machine (17) are placed to expedite work flow. Special turning jobs are performed on lathes (18). Transmissions and differentials are overhauled on stands (19). Transmission tester (20) is used to check the proper functioning of all components of this particular unit. Distributor tester (21) is located near small drill press (22). Carburetors are tested and adjusted on carburetor test stand (23). Air operated units are checked for operation on air test stand (24). Brake drum lathe (25) and brake reliner (28) are major equipment units for brake overhaul. Clutch stand (26) for clutch overhaul, and power hack saw (27) are located nearby. Generators are tested on generator test stand (29). Complete engines are run in and given final adjustments on engine dynamometer (30) and then placed in storage rack (31) located near the main store room.

SHOP Leaves Nothing to "Desire"



Continued from Page 49

compressor, carburetor, distributor, etc., are removed and sent to the respective sections for overhaul.

The jib crane, like the other two in the shop foreground, is made up of an I-Beam post and a horizontal I-Beam supported by guy rods. A standard overhead hoist unit, rolls along the I-Beam in the same manner as if on the monorail, thus permitting exact spotting at any point within the arc of the jib.

The engine itself is now stripped into its component parts, and these parts are placed in the iron and aluminum dip tanks as the case may be for the final cleaning. While this operation is going on, the transmission, air compressor, etc., are being dismantled in their sections and returned to the dip tanks for their final cleaning.

The engine parts exclusive of the block are collected on a roller bench and rolled to the engine rebuilding stand designated for this particular job. The block is delivered by the monorail crane to the same stand, and the rebuilding begins.

The other parts of the power unit are returned to their

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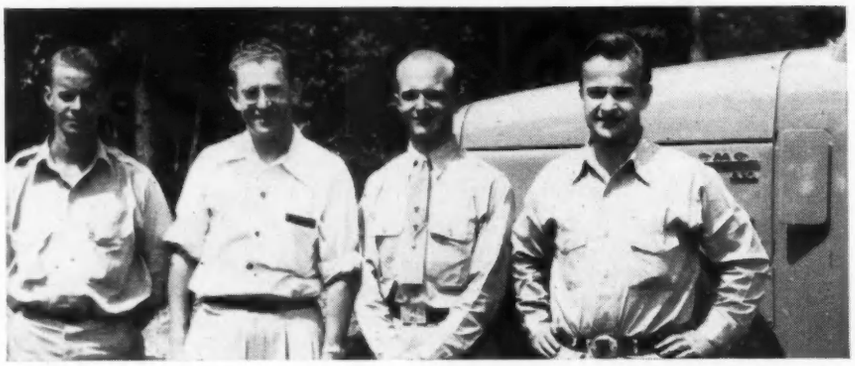


Field engineers handling the test are, left to right, S. W. Smith; A. Taragin, project engineer; J. R. Hutchins; and Theo. Dec. RIGHT, Project field office

The eyes of the truck transportation industry are focused on a 1.1-mile stretch of Route 301 in Maryland where eight trucks are rolling day and night, and their effect on the highway is being determined scientifically

MARYLAND ROAD TEST Gets

By A. W. Greene
Managing Editor
Commercial Car Journal

DEEP in the heart of Maryland, on a 1.1-mile stretch of Route 301, history is in the making.

Behind two great road barriers, shutting off all general traffic, eight trucks in four different gvw classifications are rolling relentlessly, day and night, to prove or disprove, in effect, the charge that truck traffic is destructive to the nation's highways. Pausing only for systematic maintenance, these trucks will continue to roll unceasingly for the next six months—unless the highway paving fails sooner—to give that stretch of highway intensive, concentrated usage that normally would take many years.

Thus, for the first time in the history of modern truck transportation, the industry and its bitter critics will acquire something they never had—facts; scientific, unbiased facts that should settle the many arguments and serious charges based, heretofore, on visual evidence.

Pavement Nine Years Old

THE test strip is located nine miles below La Plata, Md., 45 miles south of Washington, D. C. This pavement is nine years old. Except for one small spot, it appears to be in excellent condition. This strip was selected as a suitable test road because it has withstood normal traffic and seasonal weather changes for nine years with very little damage. Also, climatic conditions are considered ideal.

To determine the exact composition of the paving, slab was cut and analyzed

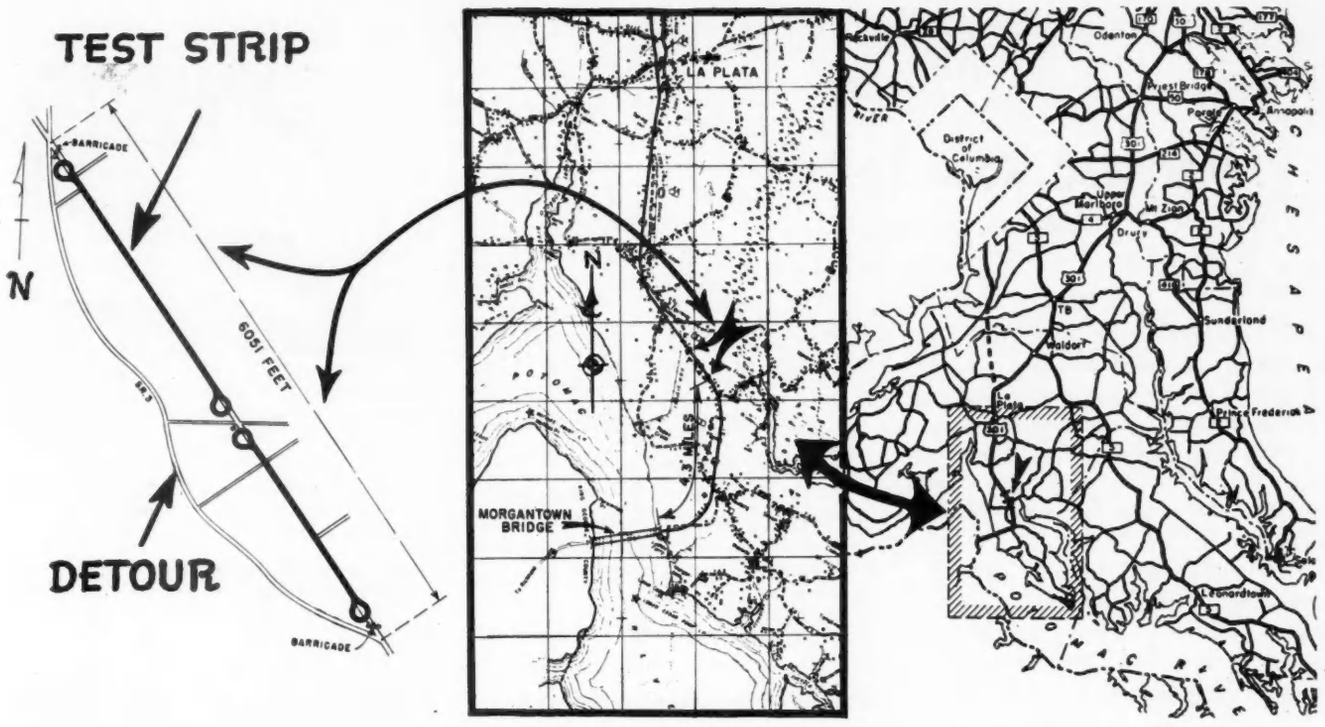
It is a two lane, 24-ft highway, made up of 12x40-ft concrete slabs of the 9-7-9 parabolic, mesh-reinforced type, said to be laid on a good subgrade. Shoulders are the gravel type, drainage is generally good.

Normal traffic prior to the test comprised all types of commercial and passenger vehicles. However, state traffic records and spot surveys have shown that there has been no appreciable truck traffic exceeding 18,000 lb per axle.

Traffic normally carried by this road is being detoured to an alternate parallel road.

Test Road Divided

THE 1.1-mile test road is divided into two sections. In one section, single rear axle trucks with a 18,000-lb axle load are rolling back and



This historic test is situated in a historic setting paralleling the Potomac River 45 miles south of Washington, D. C. Major portion of shaded area in map at right is shown in center panel. Barricaded test road and detour are at left

Underway

forth over one lane. Trucks having a 22,400-lb axle load are making the same number of trips in the parallel lane.

The other half-mile section is being tested in the same way. Trucks equipped with tandem axles loaded to 32,000 lb are moving in one lane, and other trucks with 44,800-lb loads on their tandem axles and running back and forth in the adjoining lane.

In all cases, the loads consist of concrete blocks.

Each of the two sections of the test strip has two turnarounds. The inner arc of each turnaround has a radius of 30 ft, and the outer perimeter has a 50-ft radius. They are of the penetration macadam type of construction.

Test Strip Charted

BEFORE the tests were started at 10 a.m. on June 22, the full length of the test strip was charted in detail. Each block of the paving

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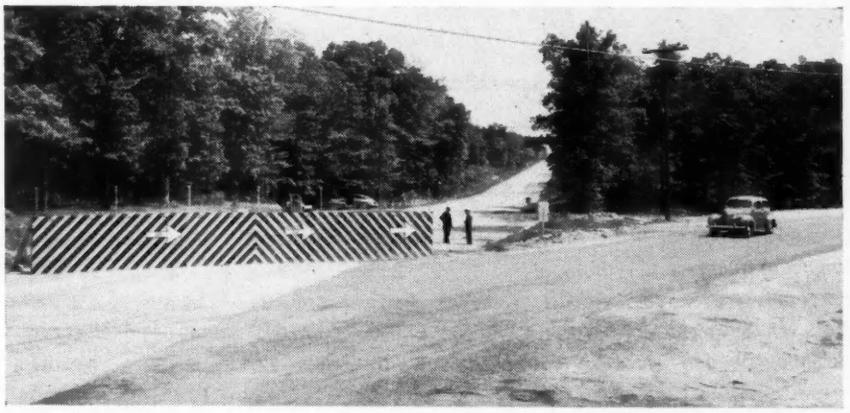


This is the North barricade across Route 301. It is one of two barring all traffic, including official personnel vehicles, from test road. Detour is at right

Seven truck manufacturers cooperated in the project by supplying the necessary eight vehicles (GM supplied two). Below, vehicles are equipped for test

. . . Maryland Road Test

Continued from Page 55

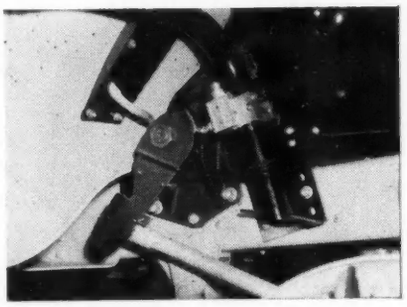
was numbered. Its condition was minutely examined and recorded on a special form having a grid scale in one-foot blocks, as shown in the accompanying illustrations. Wherever any defects were found, the exact nature, appearance and location was recorded.

Preliminary soil surveys and core and slab samples of the paving were taken at different points to provide a complete record of the construction characteristics of the test strip. Every detail that might affect the test, such as measurements of surface elevations and subgrade condition, was made part of the records. Scientific instruments are being used to measure stresses and other factors that contribute to highway wear.

Course Based on Experience

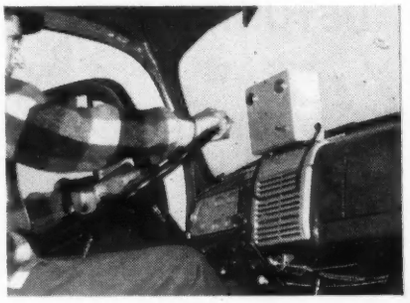
THE test course has been scientifically laid out and testing procedures are based on actual traffic experience. For example, it has been determined by numerous spot checks that one out of every five trucks that travel along this route followed the outside edge of the paving with its right wheels. One out of every five trucks travelled about two feet from the outside edge of the paving. The remaining three vehicles ran a course between these two points.

(TURN TO PAGE 164, PLEASE)



Close-up of micro switch and actuating cam connected to steering mechanism to actuate test strip signal lights in cab

Lights are shown on dash in front of driver, who follows yellow, white, or repairing shoulder at a turnaround



Specifications of Test Vehicles—ROAD TEST ONE—MD.

8 Single-unit Trucks

	Series I	Series II	Series III	Series IV
Number of trucks	2	2	2	2
Power unit type	4 x 2	4 x 2	6 x 4	6 x 4
Gross vehicle weight—lb.	24,000	29,000	40,000	54,000
Weight distribution—(Approx.) 1000 pounds	6—18	6.6—22.4	8—32	9.2—44.8
Tires	11.00x20 (12 ply)	11.00x20 (12 ply)	11.00x20 (12 ply)	11.00x20 (12 ply)
Maximum net hp.	110-120	130-145	135-145	175-200
Top speed (mph)	50	50	50	50
Body length (min.)-feet	12	12	16	18
Body width (min. inside)-inches	87	87	87	87

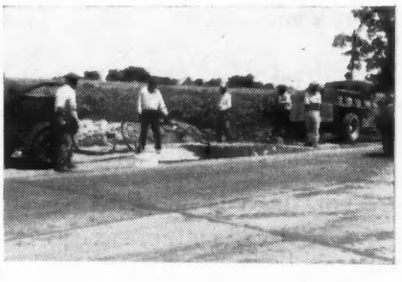
General Specifications

1. Transmission and rear axle ratios—Standard ratios available for top speed of 50 mph. Desire to obtain highest possible rate of acceleration between 10 and 40 mph.
2. CA Dimension—Commensurate with specified body length.
3. Body type—Stake and platform. Platform with stake pockets satisfactory.
4. Color—Immaterial.
5. Axle suspension—Conventional type of spring suspension for all vehicles. Identical type of tandem axle suspension for the 4-6 x 4's.
6. Tandem axles shall not be less than 50 in. apart and as near to 50 in. as can be supplied. The spacing for all four vehicles shall be the same, if possible.
7. Auxiliary equipment
   (a) Clearance and marker lights to meet Maryland safety regulations.
   (b) Spare tire and rim for each vehicle.
   (c) 10-ton hydraulic jack.
8. Engine—Gasoline-powered for each vehicle.
9. Tires—Any make commonly used by manufacturer.
10. Maintenance—Highway Research Board will provide service and repair of vehicles, unless manufacturer desires otherwise.

Below, vehicle is equipped for tests. Steering gear gets micro switch. Cab gets a beam-interrupting number plate

Tandem-rear heavy near a trip-counting device, where accuracy of photo-electric trip counter is being tested

Test road will be maintained by Maryland and charged to project. Below, repairing shoulder at a turnaround



These forms represent part of the necessary paper work of the project. At right is Daily Truck Record. Below is form to note condition of paving. There's a card for every slab, and all defects and their location are recorded

HIGHWAY RESEARCH BOARD
ROAD TEST ONE - MD
DAILY TRUCK RECORD

Truck No. _____ Series _____ Section _____ Date _____ 1950

Shift No.	Driver		Time			Odometer Reading			Applications			Gas	Oil
	Init.	Name	Start	Finish	Diff.	Start	Finish	Diff.	Start	Finish	Diff.	Gallons	Quarts
1													

HRB FORM MD 1-2M

HIGHWAY RESEARCH BOARD
ROAD TEST ONE - MD

Slab No. _____
Section No. _____
Date _____ to _____

Grid Scale 1 Division = 1 ft. Sub-base Thickness _____

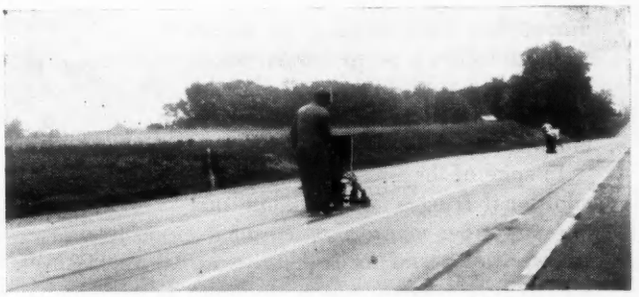
LEGEND

B - Broken or Depressed Area
P - Spall
M - Mud Jack Hole
C - Crack
Cf - Crack (faulting or moving)
D - "D" Cracking Area
J - Joint (Exp. or Contr.)
HC - Haircrecked Area

Color Date Color Date Color Date

HRB FORM MD 2-2M

To provide exact results and before-and-after comparisons, test road was surveyed and inspected, and findings recorded



Survey showed that trucks follow a well-defined pattern on highways. Similar pattern of lanes was painted on test road

As a whole, the road seems in good condition. There are a few spots that contain a number of checks and cracks. One of these is shown below. Condition of paving is noted daily

Another bad spot before repair—a "pumper" that threw a foot-high water spout as one of the lighter trucks rolled by. Truck can be seen at upper right and its shadow on road

How Capital Transit Co.

By J. B. Blaiklock
Superintendent of Equipment, Capital Transit Co., Washington, D. C.

Declining revenues, increased operating costs, and a staggering financial blow, forced the District of Columbia transit property to use drastic steps to survive

HERE ARE A FEW OF THE MAJOR ECONOMIES:

1. 25 per cent reduction of personnel in the mechanical department. "One interesting result," says Mr. Blaiklock, "was that the men retained immediately got on their toes and improved their individual output."

2. New high-speed equipment replaces slower methods and increases parts life. Motorized floor sweeper and vacuum cleaner replaces hand sweeping. Brake drum lathe and doktor increases drum and lining life.

3. Conservation of basic utilities cuts costs. Light and power conservation campaign slashes power bill by 21 per cent.

ALL TRANSPORTATION companies have been and still are faced with the serious condition of rapidly declining revenues and increasing costs. To survive we must, in every department of our companies, make all possible efforts to reduce expenses by furthering economies.

With labor costs now 70 per cent of operating costs, we must make a new and complete revision of our thinking. We must thoroughly examine each man, his work, duties, output and each method, in an attempt to evolve a new formula, which will enable us to maintain our vehicles in a safe, dependable way with a much lower dollar cost.

In spite of the wage increases, plus additional fringes, we all know that the output per man decreased during the war years and through the postwar period. Some means must be found to build up this output; not by hounding the men or breathing down their necks, but by a careful choice of supervisors or retraining of the present ones, and by a program of man training into the best methods to be used and the safest and most economical way to do the job. This can be done only by adequate supervision, through an understanding and well-trained supervisor.

Supervisor Analysis

BEFORE selection of the supervisor is made, he must be carefully analyzed and checked. It is not sufficient that the man know his job. It is just as important that he has a fairly good education, reasoning ability, good mechanical comprehension, and with (and this is most important) the proper temperament.

He must be well adjusted, alert and practical. Above all, must be thoroughly sold on the continuous need for economy and of new, maybe revolutionary, methods.

He should know his costs.

Reduction in Personnel

IF WE have men in our departments, perhaps left over from the war years (when we were compelled to hire persons who would not have been hired if normal procedures and personal tests were made), who can not or will not perform their duties in a satisfactory way, we must eliminate them as employes.

To explain how some of these problems might be handled, let me recite some of our experiences on the Capital Transit property, with particular attention to the mechanical department, although other departments have made similar moves.

During 1948 and 1949, we experienced a steady decline in revenue. In 1949, we wavered between the black and red for some months. On December 18, 1949, we were handed down, by an Arbitration Board, a wage award retroactive to July 1st,

EDITORS' NOTE: These articles by Mr. Blaiklock and Mr. Savage have been excerpted from papers they presented at the Joint Meeting of Association of Transit Equipment Men, Middle Atlantic States, and the Mechanical Division, Region 2, American Transit Association on June 5 to 9 at Wardman Park Hotel, Washington, D. C.

Mr. Blaiklock's paper covered two phases of maintenance economy, one of which is presented in this article. The other phase, which points out how the transportation department and its driver personnel can contribute to maintenance economy, will appear in the August issue.

Mr. Savage's paper is essentially complete.

Slashed Maintenance Costs—Part 1

which will cost us 1¼ million dollars annually in increased wages, plus ½ a million dollars back pay. This was a terrific blow to our finances, and drastic moves immediately became necessary in order for us to survive.

Some of these moves involved a reduction in personnel. The first group of men released were probationers. These men were in the three-months' probationary group, which is a trial period. This group was in the cleaner and shifter class, and the lower helper class; mostly inexperienced. This affected a 10 per cent reduction.

Other reductions were then made on the basis of (1) inability to do the work; (2) particular cause, such as improper behavior, poor attendance, etc., and not replaced; and (3) seniority.

Reduction by seniority had to be very carefully handled. We had, of necessity, to use seniority on the particular kind of work performed by separate shops, garages and carhouses. As an example, if a reduction was to be made in the machine shop, and the lowest seniority man had seniority over someone in the body shop, it is easy to see that we could not replace a body man with a machine shop man, and so on. These moves generally were accepted by the union.

Of course, it is only fair to state that there were two conditions which helped us in this saving of personnel. One is in the rail division. We were aided considerably by the partial retirement and low mileage made by the old conventional cars; on which the maintenance has been consistently 50 per cent higher than on the newer PCC cars.

The other factor is that we have been handicapped for some years, during the war period and after, by the large labor turnover, making it necessary to work inexperienced men at our various locations. This condi-

(TURN TO PAGE 126, PLEASE)

Scientific Carburetor Maintenance Effects Big Fuel Savings

Capital calls in carburetor expert to correct idling faults, improve maintenance techniques

$250,000 Fuel Savings Possible

For a property the size of Capital—nearly a 1000 buses that operate about 26 million miles annually—the fleet-wide increase of only 1/10 of a mile per gallon of gasoline means an annual saving of over $50,000.

Here's what has been accomplished to date at just one garage in April:

20 buses in one group showed an increase of .41 mpg.
10 buses in another group showed an increase of .24 mpg.
25 buses in still another group showed an increase of .17 mpg.
THE GOAL: .5 mpg which, in other terms, is $250,000.

By A. E. Savage
Equipment Engineer, Capital Transit Co., Washington, D. C.

THE INFLUENCE of carburetion on overall gasoline economy from a fleet of buses is certainly well known to all. The influence on our pocketbooks is so great that I want to review the potentialities of stretching our gallon of gasoline a little further.

Savings Goal $250,000

IN THE case of the Capital Transit Co. here in Washington, where nearly a thousand buses operate about 26 million miles annually, the fleet-wide increase of only 1/10 of a mile per gallon means an annual saving of over $50,000. Should we be able to increase our fleet mileage as much as half a mile per gallon (and at the present time this appears within reason) those savings would come in the neighborhood of a quarter million dollars annually.

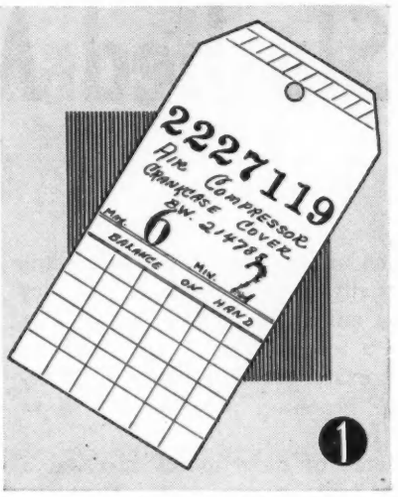
It was with this desirable target in view that, last November, we asked

(TURN TO PAGE 105, PLEASE)

Shop hints from FLEET SHOPS

$25 FOR THE BEST HINT PUBLISHED EACH MONTH • • •

$5 FOR ALL HINTS PUBLISHED EACH MONTH



1

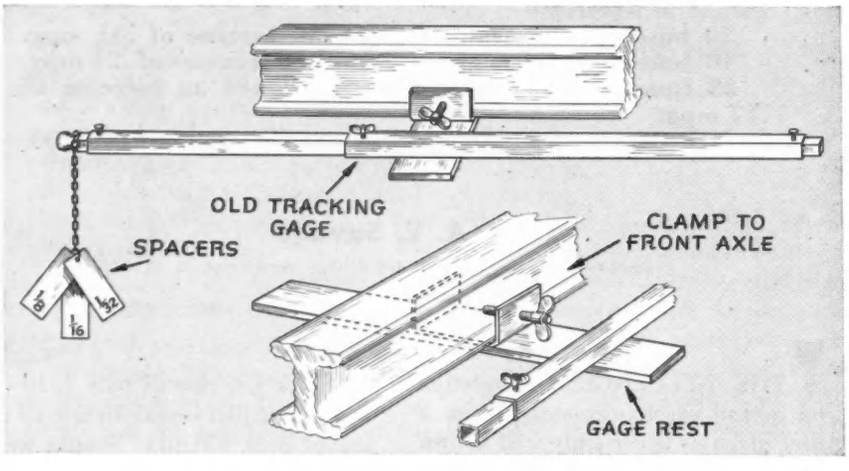
1. Gasket Identification

by James J. Sloan
Neibauer Bus Co.
Bristol, Pa.

Our biggest stockroom headache is the storage of gaskets. At one time it was necessary to carry about 50 different sizes and types. We have simplified stock control through a system of tags hung over the parts bin or the hanger so that we can tell stock condition at a glance.

The tags are 2 in. by 4½ in., with the following information in large easily read figures: part number, nomenclature, maximum number re-

$25 Hint of the Month ★



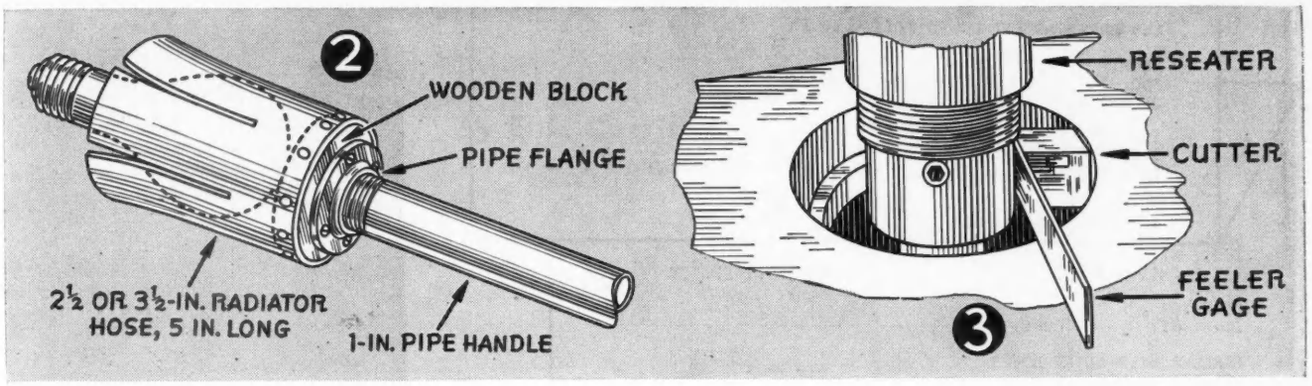
Modified Toe-In Gage

by James A. Wanstall, Delaware Coach Co., Wilmington, Del.

We have made up our own toe-in gages from old tracking gages and a few pieces of scrap. They are handy, light, accurate and save a lot of time in checking our heavy vehicles. Here is how one can be made.

Cut two sections of an old tracking gage in 48-in. lengths, so that one will slide into the other. Fit a clamping device to the outer section. This can be made from a nut welded to the surface, with a winged-nut stud used to screw down on the inner section. A plug of iron is placed into one end of the device and a set screw is fitted into it to hold the piece firmly. The plug for the other end is modified as shown to take a small chain, which holds the various checking gages necessary.

Guide for the gage is made from a strap iron, bent U-shaped and drilled to take a thumb screw. To the bottom of this piece a 36-in. piece of strap iron is welded as illustrated. This guide is fitted to the center of the front axle so that the strap iron is parallel with the vehicle. This acts as a rest for the gage and also as a guide for positioning the gage just 18 in. from the axle



quired, minimum number required, and finally the number on hand. The latter figure is altered each time a gasket is removed from stock to show correct parts on hand.

2. Bulb Installing Tool

by Clifford Rierson
Adams Co. Highway Commission
Friendship, Wis.

Here is a simple device we made up to expedite the job of installing new electric light bulbs in ceiling fixtures. It saves locating a ladder and climbing to replace burned out bulbs.

The tool can be made from ½-in. gas pipe or from a wooden handle of length sufficient to reach the ceiling. A 5-in. length of 2½-in radiator hose is cut for one end, and a similar piece of 3¼-in. hose is fitted to the other end of the handle. This will accommodate popular sizes of bulbs.

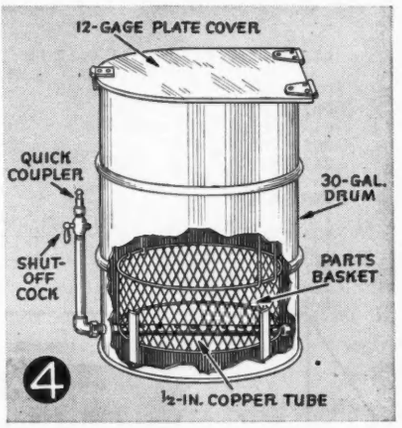
The hose lengths are split as shown and tacked to a wooden plug which is in turn secured to the ends of the handle. If pipe is used, pipe flange fittings can be used to fasten the handle to the heads.

3. Valve Seat Cutter

by George Chinn
Ohio Valley Bus Co.
Huntington, W. Va.

At times it becomes necessary to install valve seats in cylinder blocks or heads of sizes other than which are supplied by manufacturers. A valve seat cutter of a certain size may or may not be available. By using a feeler gage which is inserted between the shoulder of the cutting tool and the tool holder as shown any diameter hole can be bored to fit any odd size valve seat.

The feeler gage should be withdrawn after tightening the fastening screw. Shops using dry ice to freeze valve seats may desire to have the holes somewhat smaller than recommended and can use the above method to obtain the dimensions desired.



4. Small Parts Cleaner

by Joel L. Crupper
Crupper Transport Co.
Hutchinson, Kan.

This carburetor and small parts cleaner can be made up in the shop from old parts and does a wonderful job. Connected to the air line, agitation is provided by the air bubbling through the solution. Flow rate is provided for through adjustment of the petcock as shown.

The tank is made from an oil drum of size sufficient to handle the parts which are to be cleaned. Air diffusion is obtained by drilling a series of holes in a ½-in. length of copper tube which is inserted at the bottom of the drum and connected to the air supply through nipples, elbows, ½-in. pipe, a shut-off cock and a quick coupler. A parts basket can be made up, or a dipping basket can be used. It should have 4-in. legs to keep the weight off the pipe and to provide for settling of the dirt. A lid is made from 12-gage sheet steel, hinged at one side and clamped to the drum through a hasp fastener at the other. A vent hole should be made for escape of air. This job will do the trick and costs little in time or money.

5. Speedometer Repair

by Harry Muller
Auto Service Garage
Danboro, Pa.

Tracking down a noisy speedometer cable or casing or bearing is easier if the speedometer is removed and a short length of speedometer cable inserted so the speedometer rotor may be spun by hand.

If the speed is insufficient to show up the fault, insert the end of the short cable in a hand or electric drill and spin it.

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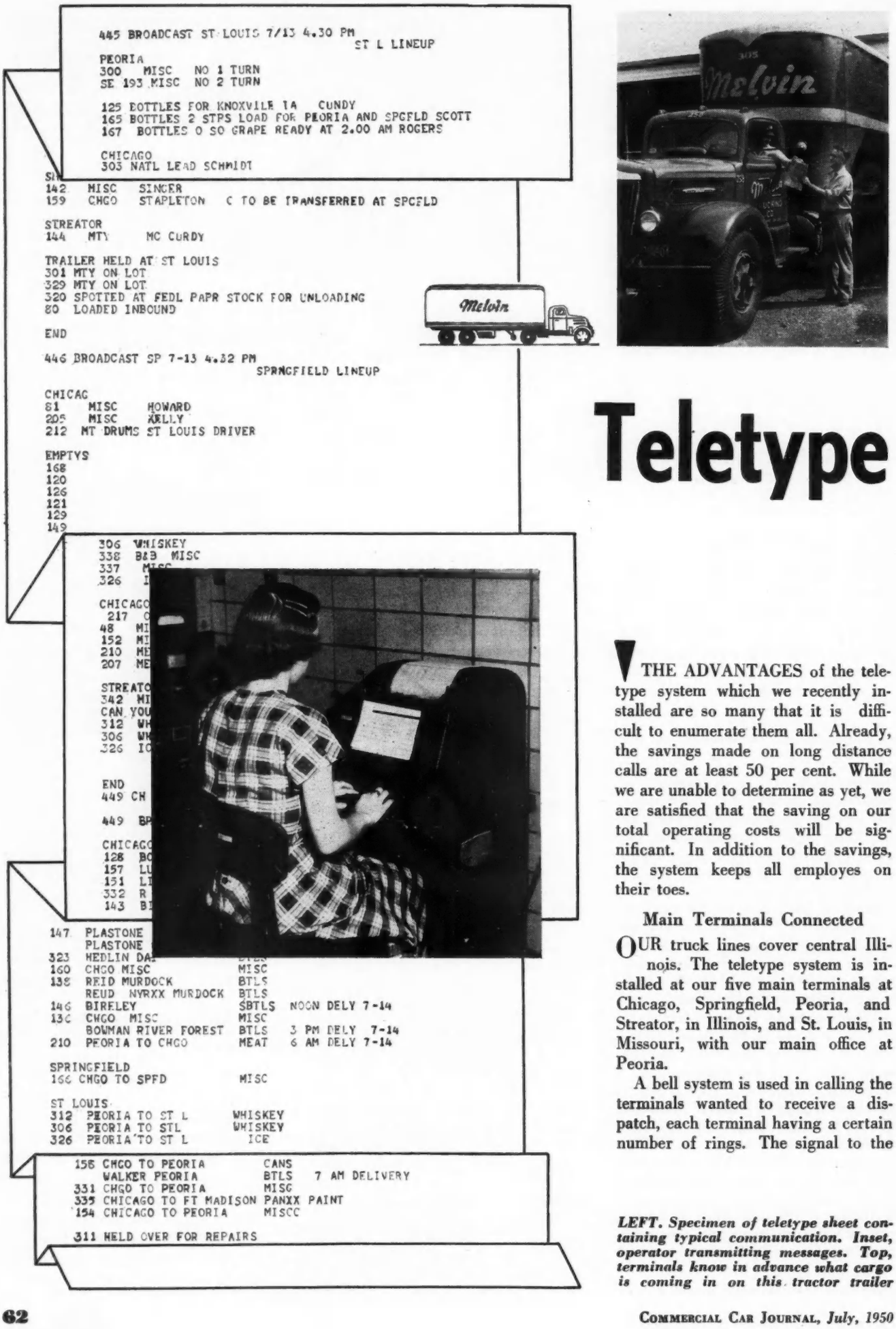
before and aft, with respective checks of front and rear position of the front wheels. For underslung axles the strap iron guide can be welded to a hook suspended from the axle.

Thickness gages of varying sizes are fastened to the end of the chain, and labeled for either front end specification of the individual truck, or labeled with truck model on which the particular gage is to be used.

The gage is located between the front tires in the usual manner. It rests on the guide and is held level with the axle in front and rear checks. The proper thickness gage is placed between the end of the gage and the tire and a snug fit is required. Thus a man can tell quickly and without having to resort to reading scales whether the steering angle is within limits. In this way you can save time and get accurate readings as well.



Teletype

THE ADVANTAGES of the teletype system which we recently installed are so many that it is difficult to enumerate them all. Already, the savings made on long distance calls are at least 50 per cent. While we are unable to determine as yet, we are satisfied that the saving on our total operating costs will be significant. In addition to the savings, the system keeps all employes on their toes.

Main Terminals Connected

OUR truck lines cover central Illinois. The teletype system is installed at our five main terminals at Chicago, Springfield, Peoria, and Streator, in Illinois, and St. Louis, in Missouri, with our main office at Peoria.

A bell system is used in calling the terminals wanted to receive a dispatch, each terminal having a certain number of rings. The signal to the

LEFT. Specimen of teletype sheet containing typical communication. Inset, operator transmitting messages. Top, terminals know in advance what cargo is coming in on this tractor trailer

By E. L. Carrison

President Melvin Trucking Co., Peoria, Ill.

Expedites Cargo Movement

Each terminal posted up to the minute on cargo arrival, shortages are located quickly, claims reduced, drivers' time checked. Phone bills reduced 50 percent

terminal to which the message is addressed is sounded immediately after the message is typed on the keyboard of the sending machine. If a message is addressed to all terminals, a series of rings is sounded and all terminals read the message.

Claims Reduced

IN THE handling of a large volume of merchandise, it is only natural that some errors will occur, and every error is a potential cause of a claim. By the speedy help of our teletype system, we can eliminate most of these claims.

One of the most common errors is the misplacement of merchandise at crowded warehouses, resulting in a shortage at the correct destination. By teletype we can now locate the short items within a few minutes. For instance, if a shipment from Peoria to Chicago arrives two packages short, the Chicago terminal would immediately advise the Peoria office by teletypewriter, giving the waybill number, shipper, consignee, the number of packages called for by the waybill and the number short. Our Peoria office would then check the bill of lading immediately to see if there had been an error in billing.

If there was no error in billing, we could trace any other angle whereby a shortage might occur. If the shortage is located at Peoria, the information is sent back immediately that it has been found and will arrive the next morning.

If the shortage is not located at Peoria, the chance is that it has been sent to some other terminal. Then the teletype message is sent simultaneously to all other terminals. Invariably, the merchandise is located at once. Then the destination terminal and the Peoria terminal are advised of the finding and that the merchandise will be forwarded to destination the following morning. The great amount of time saved by teletype over that of long-distance calls in promptly locating and delivering the merchandise eliminates a great many claims.

If a shipment from Springfield to St. Louis arrived at the latter terminal without a bill, a teletype message to Springfield, advising of the fact, would be immediately sent and Springfield would send a teletype copy of the bill, the regular bill following the next day.

Speeds Cargo Movement

ANOTHER great advantage is the fact that each morning each terminal knows just what equipment will arrive there during the day. This enables each terminal to make prompt arrangements for return loads.

This information to each terminal is made known by teletyping from each terminal between 4:30 and 5:15 p.m. to other terminals what equipment will arrive the next morning. This information includes the number of tractor, number of trailer, type of freight, amount of weight, arriving and leaving time and the driver's

(TURN TO PAGE 98, PLEASE)

MURDER
In the Fleet Field
. . . . the Victim

Truck Springs

Abused and overloaded springs can let you down in a hurry. Here are 14 signs of impending trouble.

SPRING failures are costly. The spring itself is not the most costly item —we must take into consideration the number of hours that the truck or bus is out of use, and the labor of removing and installing new assemblies. In order that we may give a full picture we shall list the spring problems and offer suggestions.

Broken Plates

THERE are many contributing causes for broken spring plates. Broken eyes are caused by brake pressure and torque, misalignment of the eye in the hanger; improper alignment of the bushing and of the shackle bolt. An eye must work freely in the hanger, and the shackle bolt must work freely in the bushing. If there is any misalignment which causes binding of the eye, it throws an extreme amount of strain on the eye and will result in eye breakage. Another reason for eye breakage is the making of turns at excess speeds with the operator applying the brakes or the brakes are applied when hitting extreme impressions on the road.

Another important matter to consider is the proper adjustment of brakes. Today we are traveling at high rates of speed and have very high pressure brake strains put on the spring eye which takes all the torque of the coach or truck. If all four brakes are adjusted properly and the proper amount of air application is in each one so that they are all equalized, the strains are then equal on the four springs and do not throw extra strains on one spring or another due to the unequalization of the brake setting.

The breaking of the main plate at the center or half-way between the center of the spring and the eye can be caused by overloading; improper grading of the spring; the spring not designed to carry the loads under the road conditions which the vehicle operates; or the rebound action of the spring.

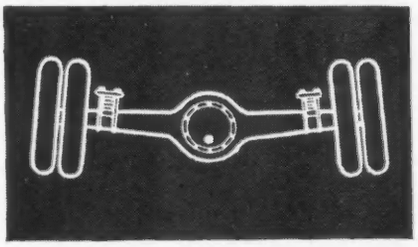
Misalignment

THERE are many springs that have off-center dimensions; namely, some springs are manufactured to, say, 22½ in. center, which is over-all 25 in. There are other springs made 22 in. x 23 in., 22¾ in. x 22¼ in., etc. The off-center

(TURN TO PAGE 112, PLEASE)

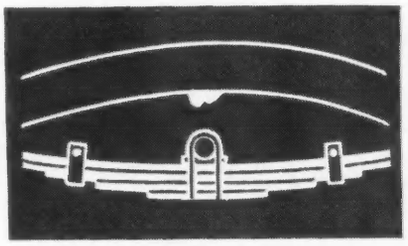
Drawings courtesy Maremont Automotive Products, Inc., and Leaf Spring Institute. Material supplied by Allen J. Imblum, vice president, Pittsburgh Auto Spring Co.

Sagged Housings



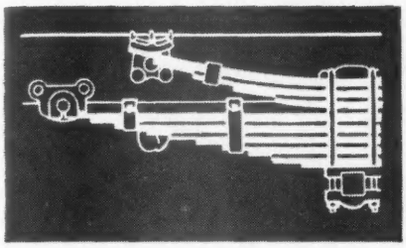
Weak springs transfer weight to the axle housings to cause misalignment eventually. Overloading weakens springs and contributes to this condition. The price—rapid tire wear, differential trouble and poor stability.

Damaged Rubber Bumpers



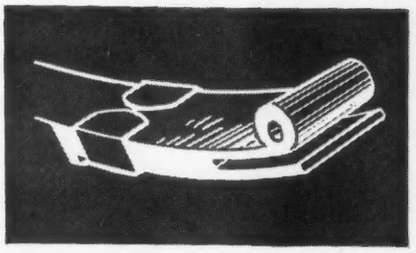
"Striking through" indicates spring fatigue and impending failures. When bumpers show wear, you can be sure loads have exceeded the capacity of the springs. Fatigue may occur over a long period of use, but chances are overloading and speeding over rough roads have played a part. The price—rough riding qualities and possible axle breakage.

Sagging Springs



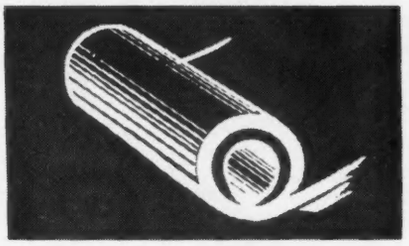
A quick check will show up weak springs. If helper springs touch brackets when truck is empty, main springs are sagged. The price—limited life of assembly operating under these conditions.

Shifted Leaves



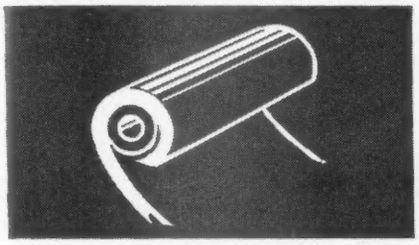
Loose center bolts, loose spring clips and sometimes loose U-bolts permit shifting of leaves and results in a weakened spring. The price—early spring failure.

Worn Bushings



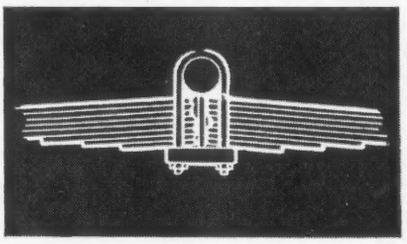
Worn bushings at the spring eyes cause rattles and rough riding qualities. Due to inadequate control of flexing and rebound, spring breakage may result.

Loose Eyes



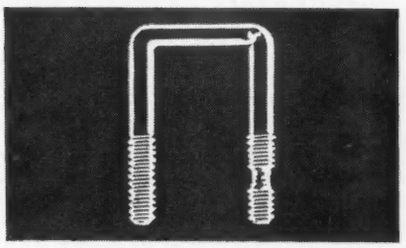
Improper shackle fit may result from unwound eyes, which in turn is usually the result of fatigue. Overloading, rough roads and rounding corners too fast contribute to this condition.

Loose U-Bolts



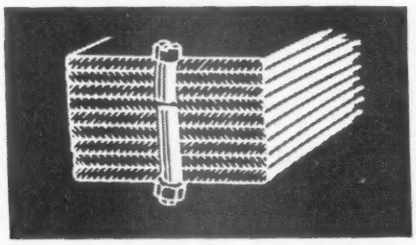
Loose U-bolts as well as worn axle clips and spring pads permit a concentration of bending stress, result in leaf breakage at the axle. The price—a possible road failure with resulting loss of time and money.

Worn U-Bolts



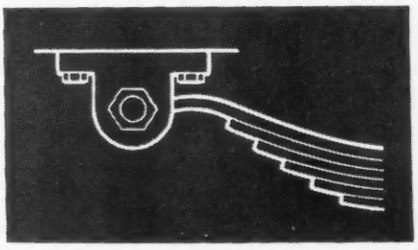
Stripped threads on U-bolts, or fractures at the bends soon permit shifting of the spring on the axle. Result is axle misalignment, tire wear and early fatigue failure of the spring.

Broken Center Bolt



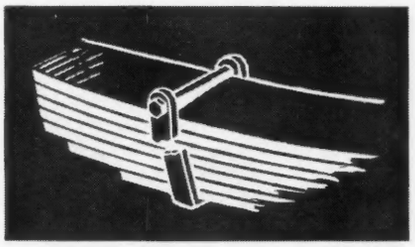
This may result from the fact that the springs are loosely mounted on the axle, through defective U-bolts or worn spring pads. When center bolt breaks, springs shift and permit misalignment, weak suspension systems and early failures.

Bent Main Leaf



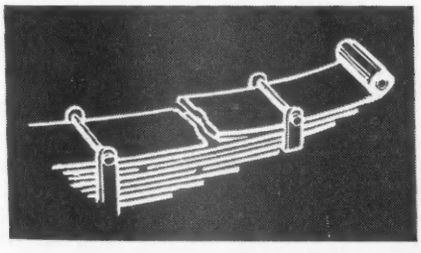
"Frozen" shackles will seize spring eye and bend or break main leaf because flexing of leaf is confined to short section adjacent to the shackle. The price of inadequate lubrication of shackles—accelerated wear and early failures.

Broken Rebound Clips



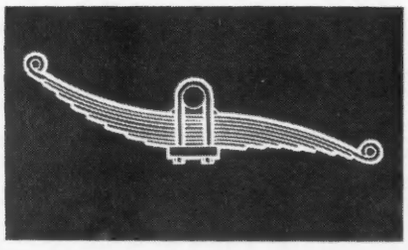
Since rebound clips compel the shorter leaves to share some of the force of the rebound, they are an important factor in preventing breakage. They help prevent fanning and thus add extra support to the spring assembly.

Broken Leaves



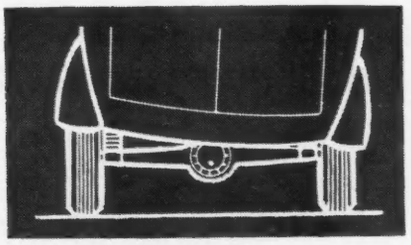
Overloading, overspeeding, frozen spring shackle bolts, broken spring clips, loose U-bolts all contribute to weak support which eventually results in complete spring failure. The price—costly breakdowns and replacements.

Spring Wrap Up



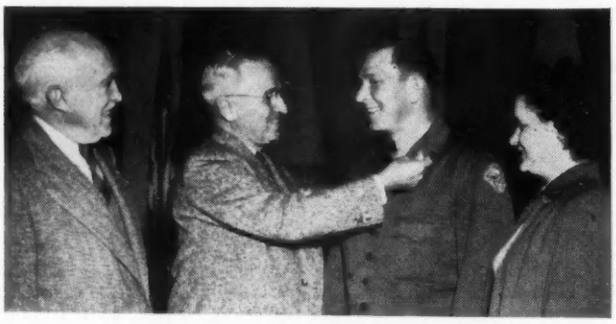
Racing engine in low gear, then suddenly letting in the clutch; harsh use of brakes; braking over a rough bump will twist axle and contribute to wrapping up of the rear springs. The price—early fatigue failure.

Out of Level



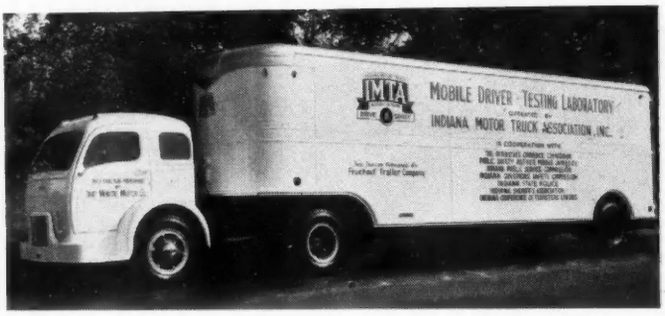
One of the first indications of weakness is a listing vehicle. This results from overloading, improper distribution of load, rounding corners too fast, or from normal fatigue failures. The price—instability, tire wear and breakdown.

PICKED pix OF INTEREST TO FLEETS



▲ **Driver of the Year with The President**

President Harry S. Truman examining the diamond and gold pin presented by ATA to Driver of the Year, Lloyd Reisner, of Hancock Truck Lines, Indianapolis. Others shown are Mrs. Reisner and Major General P. B. Fleming, chairman of the President's Highway Safety Conference; also chairman of the 3-man board of judges which selected Mr. Reisner over country-wide nominees

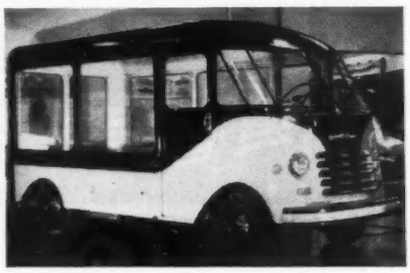


IMTA's Mobile Test Lab ▶

Following the lead of several other states, the Indiana Motor Truck Association now operates this mobile driver testing laboratory. On tour in the Hoosier state, the safety unit is equipped with newest testing equipment including a Keystone telebinocular set, to determine driver proficiency. It is powered by a new 3000 White tractor and the trailer was furnished by the Fruehauf Trailer Co.

▼ **Glass Side Panels**

Shatterproof safety glass panels have been substituted for aluminum panels in this 350 cu-ft Kurb-Side Displayer manufactured by J. B. E. Olson Corp., Brooklyn, N. Y. Dual glass panels are shock mounted in neoprene rubber

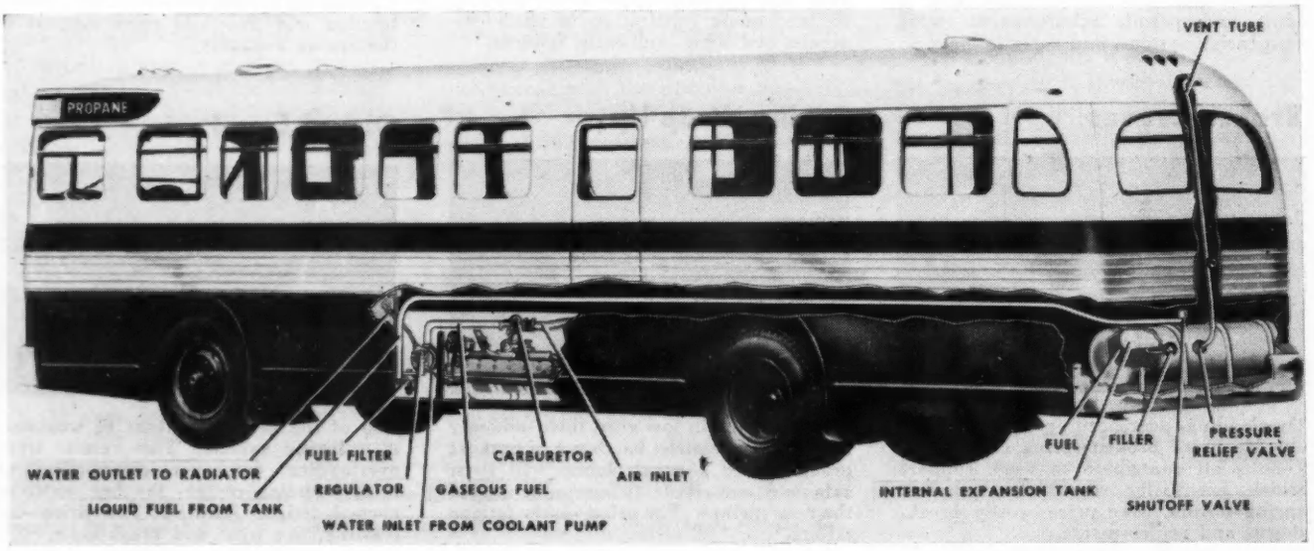


Navajo Wins First Prize ▶

One of the Navajo Freight Lines' popular Squeezable Squaws displays plaque recently awarded as first prize in the 500,000 to 1,000,000 miles div. of the Colorado Motor Carriers' Assn. Truck and Bus Safety Contest

▼ **Twin's Propane System**

The first standard line of motor buses to employ a propane (125 octane) fuel system. An increase in time between engine overhauls and average savings up to two cents per mile on fuel are claimed by manufacturers, The Twin Coach Co. of Kent, Ohio



Average Life of Air Brake Governors is 65,000 Miles

FLEET OPERATORS' EXPERIENCE HANDBOOK

SURVEY NO. 18

Part 1

Some fleets report average governor life to be as low as 5000 miles, others claim 300,000, but national average is 65,011. Brake diaphragm life reported varies from 10,000 to 300,000 miles, with 82,305 average

Analysis **by A. W. GREENE,** *Managing Editor, Commercial Car Journal*

THE CURRENT SURVEY of the life of air brake parts embraces components of the system and a few of the basic parts subject to greatest wear—16 in all. Nine of these are covered in this study, as shown in the accompanying tables.

Inasmuch as the use of air brakes is not as extensive throughout the various types of fleet operations, there were fewer reports received than for the hydraulic braking systems. However, the information received follows the established pattern of experience so closely that, it is believed, these data represent a perfectly valid cross section of the experience of all the fleets in the nation having vehicles equipped with air brakes.

Of all the air brake parts covered in this study, the governor is reported to be the first part to require replacement. This came as a surprise. It was expected that the various diaphrams would head the list. The only conclusion that can be drawn is that the manufacturers must be supplying a fine quality of diaphragms. The maintenance men, conceivably, could take the opposite viewpoint and conclude that they should be supplied with better governors.

65,011 Miles

Governor is Air Brake System's First Unit Replaced

Table 1 **Reported life span varies greatly from 5000 to 300,000 miles, with national average of 65,011. Air lines average 119,848, connections 100,793**

VOCATIONAL GROUPS	Number of Fleets Reporting	AIR GOVERNOR Mileage Range (Last 000 Omitted)	AIR GOVERNOR Mileage Average	LINES Mileage Range (Last 000 Omitted)	LINES Mileage Average	CONNECTIONS Mileage Range (Last 000 Omitted)	CONNECTIONS Mileage Average
FOR-HIRE CARRIERS	23	20 - 100	59,190	40 - 500	139,118	25 - 200	92,333
FOOD DISTRIBUTION	23	25 - 300	80,947	74 - 400	137,579	15 - 200	97,231
GOVERNMENT	17	5 - 110	46,429	10 - 200	71,786	10 - 200	72,083
CONSTRUCTION AND MINING	3	25 - 75	50,000	60 - 200	130,000	200	200,000
INDUSTRIAL	4	50 - 200	95,000	50 - 300	150,000	100 - 500	300,000
PETROLEUM	8	25 - 200	83,571	48 - 200	127,714	50 - 200	96,167
PUBLIC UTILITY	8	20 - 100	70,600	40 - 75	55,000	40 - 100	71,667
RETAIL DELIVERY	8	20 - 150	63,000	30 - 100	68,333	80 - 250	145,000
TRUCK RENTAL	2	50 - 60	55,000	60	60,000	60	60,000
TRUCK AND BUS FLEETS, MIXED	10	18 - 120	47,714	75 - 400	208,000	100	100,000
TOTAL AND AVERAGE ALL VOCATIONAL GROUPS	106	5 - 300	65,011	10 - 500	119,848	10 - 500	100,793

The average life of air brake lines also may come up for critical scrutiny by some fleet maintenance men. That particular mileage, of itself, seems perfectly satisfactory. However, in relation to some of the operating parts of the air brake system, it would seem that this non-operating part should have a higher average life.

Of the many valves employed in the operation and control of the air brake system, five are included in Tables 2 and 3. Taken as a group, the reported life of these valves seem quite consistent, with possibly one exception. It was expected that the average life of relay emergency valves would be higher than that shown in Table 3.

The life of compressors, and their major parts, will be covered next month.

82,305 Miles

Air Brake Diaphragms Give Creditable Performance

Table 2

While some fleets reported as few as 10,000 and 15,000 miles, national average is 82,305. Brake relay valves net 70,894, application valves 77,933

VOCATIONAL GROUPS	Number of Fleets Reporting	BRAKE DIAPHRAGMS Mileage Range (Last 000 Omitted)	BRAKE DIAPHRAGMS Mileage Average	BRAKE APPLICATION VALVES Mileage Range (Last 000 Omitted)	BRAKE APPLICATION VALVES Mileage Average	AIR BRAKE RELAY VALVE Mileage Range (Last 000 Omitted)	AIR BRAKE RELAY VALVE Mileage Average
FOR-HIRE CARRIERS	23	30 – 250	99,318	40 – 250	96,429	35 – 250	79,048
FOOD DISTRIBUTION	23	20 – 300	109,250	7 – 300	103,684	9 – 100	59,944
GOVERNMENT	17	15 – 100	50,029	5 – 200	58,385	10 – 100	56,818
CONSTRUCTION AND MINING	3	10 – 70	41,667	25 – 70	47,500	25 – 90	57,500
INDUSTRIAL	4	50 – 150	100,000	50 – 200	125,000	25 – 250	115,000
PETROLEUM	8	25 – 200	72,143	25 – 300	97,917	25 – 175	88,375
PUBLIC UTILITY	8	55	55,000	70	70,000	50 – 88	66,600
RETAIL DELIVERY	7	20 – 150	65,714	30 – 100	56,429	30 – 150	57,143
TRUCK RENTAL	2	60 – 80	70,000	60 – 150	105,000	60	60,000
TRUCK AND BUS FLEETS, MIXED	10	40 – 240	82,000	40 – 120	90,556	30 – 120	75,286
TOTAL AND AVERAGE ALL VOCATIONAL GROUPS	105	10 – 300	82,305	5 – 300	77,933	9 – 250	70,894

77,555 Miles

Relay Emergency Valve Life Same as Application Valves

Table 3

There's only a few hundred miles difference in life of the two valves, as shown in Tables 2 and 3. Hand control and safety valves net over 120,000

VOCATIONAL GROUPS	Number of Fleets Reporting	RELAY EMERGENCY VALVE Mileage Range (Last 000 Omitted)	RELAY EMERGENCY VALVE Mileage Average	HAND CONTROL VALVE Mileage Range (Last 000 Omitted)	HAND CONTROL VALVE Mileage Average	SAFETY VALVE Mileage Range (Last 000 Omitted)	SAFETY VALVE Mileage Average
FOR-HIRE CARRIERS	23	35 – 250	85,435	35 – 250	112,143	40 – 300	146,944
FOOD DISTRIBUTION	23	8 – 300	80,947	7 – 300	131,000	20 – 300	151,214
GOVERNMENT	17	10 – 100	63,250	35 – 200	87,500	20 – 200	79,000
CONSTRUCTION AND MINING	3	25 – 60	42,500	100	100,000	25 – 200	112,500
INDUSTRIAL	4	85 – 100	92,500	500	500,000	100	100,000
PETROLEUM	8	25 – 175	89,625	96 – 200	149,429	50 – 200	125,000
PUBLIC UTILITY	8	35 – 88	63,600	40 – 75	59,600	75 – 175	104,000
RETAIL DELIVERY	8	25 – 150	60,000	30 – 250	108,750	20 – 80	56,250
TRUCK RENTAL	2	60	60,000	60 – 300	180,000	60 – 300	180,000
TRUCK AND BUS FLEETS, MIXED	10	100 – 120	110,000	100	100,000	30 – 200	82,143
TOTAL AND AVERAGE ALL VOCATIONAL GROUPS	106	8 – 300	77,555	7 – 500	122,246	20 – 300	120,113

Composition of Vocational Groups as Used in the Accompanying Tables

FOR-HIRE CARRIER—Motor Freight Operators in Local and Over-the-Road Service.
FOOD DISTRIBUTION—Bakery, Dairy, and Other Food Products fleets.
GOVERNMENT—State, County, Municipal, and Federal fleets.
CONSTRUCTION AND MINING—Building, Mine, Quarry, and Gravel fleets.
INDUSTRIAL—Fleets operated by manufacturers.
PETROLEUM—Production and Distribution fleets.
PUBLIC UTILITY—Gas, Power, Water, and Telephone fleets.
RETAIL DELIVERY—(Other than Food Products) Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Store, Beverage fleets.
TRUCK RENTAL—Agencies leasing motor trucks.
TRUCK & BUS FLEETS, MIXED—Passenger carriers operating own truck fleets.

SAE Summer Meeting

Studies Wear, Performance, Design

French Lick crowd considers effect of sulphur in fuel dust, new combustion process, tire wear, automatic transmissions and Penna. truck tests

APPROXIMATELY 1200 engineers checked in at French Lick, Ind., June 5 to 9, to study a score of proposals for improving the life and performance of motor vehicles. For five days leading engineers of manufacturers and truck fleets put engineering heads together to consider problems in engine wear, valve failures, automatic transmissions, tires and such controversial questions as truck leasing. Even with the golf course and other extracurricular activities competing with speakers and round table events, meetings were well attended in general and the subject matter well worth the attention extended.

In a competently prepared paper on the effects of sulphur in gasoline on engine operation, E. J. Gay discussed results of a four and one-half year study conducted under the supervision of himself, R. E. Jeffrey, of Shell Oil Co.; and J. B. Duckworth, of Standard Oil Co. of Indiana; and participated in by automobile manufacturers, oil companies, fleetmen and technicians.

To test the effects of sulphur on engine wear seven fleets totalling 62 vehicles were operated over a wide crosssection of the U. S., while project engineers assigned to each fleet checked daily operations and oil samples regularly. After more than one and one-half million miles no difference in wear for fuels of varying sulphur content were noted in the vehicles operating under heavy and medium heavy conditions. Vehicles in the light duty intermittent service with frequent starts and stops produced consistent differences in wear rates. High sulphur fuels caused sufficient wear to require overhauling in eight vehicles engaged in medium duty delivery service. The tests showed, however, that in general high sulphur fuels had little effect upon valve operation and life, muffler life and exhaust system corrosion, nor did this type fuel contribute to excessive varnish and sludge deposits.

Development of a combustion process which by eliminating knock enables internal combustion engines to produce equal power from approximately 30 per cent less fuel was reported in a paper prepared by E. M. Barber, Blake Reynolds, and W. T. Tierney, of The Texas Co. This process, called the Texaco Combustion Process, reduces the residence time of a combustible mixture by providing for increased turbulence along with direct injection of the fuel and ignition through a spark plug. "End gas" formation is said to be eliminated due to the improved aspiration and combustion so that knocking is non-existent regardless of the octane number of the fuel or the compression ratio of the engine. This process is applicable to both two and four-cycle engines of any size. However, it does require a method of creating air swirl, careful location of injector and spark plug, and a modified combustion chamber design. The development was hailed as a forward step in conserving petroleum resources in that it not only provides improved engine efficiency but permits a broader use of less expensive and critical fuels. The speakers pointed out that approximately 71 per cent of crudes can be utilized in producing fuels for this type engine, whereas only 54 per cent can be used for existing requirements.

The mechanism causing (abrasive) wear in engines has been known for a long time, but there is not much reliable information available on the relative importance of the various sources of dirt, said W. S. James, of Fram Corp., in his contribution to a symposium on engine wear. In order to obtain such data the Fram Corp. constructed recently a dust tunnel, in which it is possible to operate a vehicle in a controlled dust storm. During various tests rather complete measurements of the engine parts were made, according to Mr. James. The following results were indicated:

(1) It will be possible to put a quantitative evaluation of the various factors involved in causing engine wear and the means used to prevent this wear. This will assist the designing engineer to determine how much of his protection dollar he should spend on which cause of wear and the effectiveness of the devices at hand to provide the desired protection.

(2) Some oil wetted types of carburetor air cleaners are of almost no value in protecting an engine against ruin from air borne dust.

(3) An oil bath carburetor air cleaner will reduce ring and bore

(TURN TO PAGE 144, PLEASE)

SAE SUMMER MEETING

Controlling Valve Wear in Diesel Engines

Valve breakage, face guttering, sticking, stem and seat wear are discussed by leading engineer, while remedial measures in design and maintenance are provided

By Vincent Ayres
Assistant Chief Engineer Eaton Mfg. Co.

THE definition of a valve problem is any function of design, operation or maintenance resulting in premature failure of the valve, or impaired engine operation. The problems with which we have been confronted in diesel engines might be listed in their order of importance as follows: breakage, seat wear, valve face guttering, stem and guide wear, sticking.

Valve breakages can result from improper installation as well as borderline designs. Improper installations are difficult to trace unless repeated, but borderline designs can be traced since the failures are usually of the fatigue type. Fatigue breakages may occur at several locations on the valve depending upon design, and we might consider the causes that will lead to this form of destruction.

These are: (1) abnormal loading of the valve, or (2) a design which lends itself more readily to fatigue failures. Abnormal loading can result from overspeeding the engine, or may be present after war has occurred in valve train parts increasing lash. The manufacturer designs a valve train for a given set of operating conditions but engines differ in their ability to operate well when these conditions are varied.

Overspeeding, while not common in diesel engines, can occur if the engine is used in a vehicle, especially downhill, or if the operator adjusts the engine so that higher speeds may be obtained. One known case was that of an operator who found he could move a much heavier load if the engine was operated 200 rpm higher than normal, but the engine broke valves when operated at this higher speed. Manufacturers are charged with the responsibility for designing valve trains with a factor of safety for overspeed.

Seat Wear

THE PROBLEM of seat wear in diesel engines has been present for many years with the greatest number of failures occurring on the inlet side. There are two possible explanations for this occurrence; one being that there may be different materials in the two ports because of the necessity of using a better steel on the exhaust for other reasons. This better material can either be a high alloy exhaust valve steel or some other corrosion resistant alloy such as stellite or eatonite which may also have a property of abrasion resistance better than the inlet valve.

The other possibility is that the exhaust valve is coated with deposits resulting from combustion which act as an insulating layer and prevent intimate contact between the exhaust valve face and the cylinder head seat.

The deposits seem to be most significant since it is a known fact that materials to be rubbed together without lubrication must be selected for this property. Most of the inlet wear, unless caused by dirt, occurs not on the valve but on the seat in the cylinder head and might be called fretting, scuffing, or microscopic welding. The rate of wear in some cases has been known to be as high as .001 in. per hour. Peculiarly, the wear may not occur on all valves in the cylinder head, and some cylinder heads may have an extreme amount of wear on one valve with none on another. This, apparently, is not a function then of metallurgical differences from one cylinder to another but is more an operating difference, such as the amount of relative distortion from one port to another and one cylinder head to another. If distortion is found to be the cause, the use of other materials or a change in the cylinder head sections surrounding the valve might result in reduced wear. That this is true is evidenced by the fact that some manufacturers have eliminated wear by changing cylinder head

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Truck Leasing—

to Pay or Not to Pay?

Vehicle lessors, truck owners and fleet supervisors battle out an industry-old problem, decide that fleet conditions influence the choice

THIS business of truck leasing—it's an evasive sort of problem that has been courting fleet operators for some time. With so many conflicting claims, promises and criticism floating through the transportation picture, SAE leaders decided to slate a round table discussion on the subject, let representatives from leasing systems thresh it out with dissenting fleetmen. H. L. Willett, of the Willett Co., led the free-for-all in a three-hour session of upwards of one hundred engineers and maintenance men. First to take the floor were proponents of leasing and guaranteed maintenance plans. Then fleet operators went to work on them to take issues with certain points (debatable beyond question), providing some tips out of the fleetman's handbag to offset some of the alleged advantages of renting vehicles. The session grew hot and ominous, with a wide difference in view point cleaving the group into two opposing sections.

Here was the line up:

Joseph Stedem, of Hertz Drivurself, outlined the advantages of vehicle leasing with National Truck Leasing System President Fred Baker backing him up. He contended that the leasing of vehicles, while not the answer to *all* truck problems, provided 1. properly engineered vehicles, 2. good looking trucks and 3. release from investment in trucks—at a cost less than that which the average private fleet operator can achieve for himself. A majority of private owners, he said, in the small and medium fleet classifications use improperly engineered trucks and shoddy looking vehicles. And, of course, they have considerable finance frozen in trucks. Lack of knowledge, inexperienced and in many cases desire to cut operating costs to a minimum are responsible for these conditions. A leasing company, on the other hand selects vehicles properly engineered to the job. They are replaced at the most efficient point, kept in tip top condition appearance wise, and are given adequate and timely maintenance. This is true of reputable leasing organizations, he said, because they can supply supervisory personnel, maintenance facilities, funds and time required to keep fleet in economical operating condition, whereas many smaller fleets do not have these facilities.

Mr. Baker compared the leasing of vehicles in fleets to the leasing of buildings in business, when companies desire to invest more money in the business in place of tying it up in real estate. He emphasized that leasing was most beneficial in organizations whose business was distribution, manufacturer or sales, and *not* in the maintenance of a fleet of trucks. Leasing, in his opinion, 1. saved time for the executive for other work, 2. provided all equipment necessary for peak season loads or at rush hours, 3. supplied vehicles to all branches of the company, or dispatched them efficiently to serve as required, 4. leveled out fleet costs over a period of time and reduced high outlays of capital at one time.

Leonard Gilbert, of the White Motor Co., explained the White Guaranteed Maintenance Plan to show how this system can 1. provide good selection of vehicles to meet fleet requirement, 2. provide adequate maintenance and relieve the owner of supervisory maintenance details, 3. do the job cheaper due to the high work flow through their efficiently-equipped shops. He emphasized that such a guaranteed maintenance plan was most effective and most advantageous where fleets operate over 50,000 miles per year per vehicle. E. L. Fortier, of International Harvester Co. outlined his company's maintenance plan in much the same terms.

Dissention came, however, when the fleetmen took the floor. Bob Gardner, of Lever Brothers; Harry Mathews, of Standard Brands; Walter Langseder, of Lipton Tea; along with others had little use for leasing. Said Gardner, leasing is not justified in a company which can provide the following qualifications: either cash to purchase required equipment or capacity to borrow (which should entail the same interest rates available to leasing companies) and adequate personnel to supervise, maintain and operate these vehicles.

Langseder, taking issue with those who had extolled the convenience of

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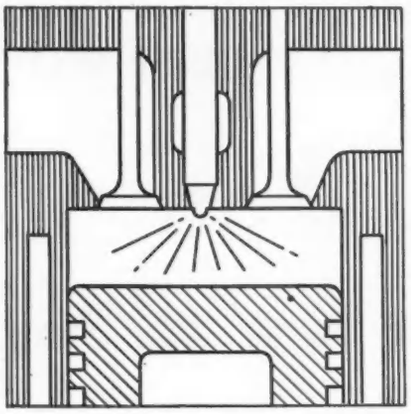
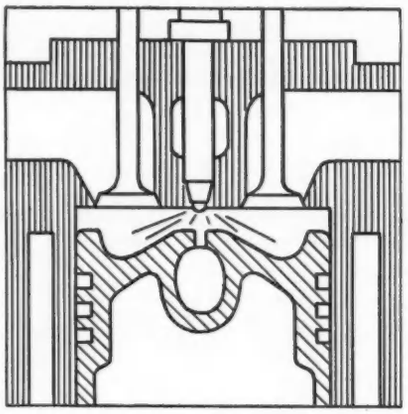
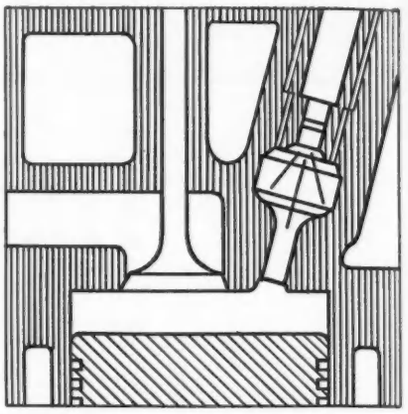


In the open chamber system turbulence is created through the design and location of the orifices in the injection nozzle placed directly over the piston



The air cell system uses an auxiliary cavity connected to the main chamber to trap charge of air and complete combustion process



The precombustion chamber features a cavity below the nozzle, where fuel enters under low pressure and is released through special orifices

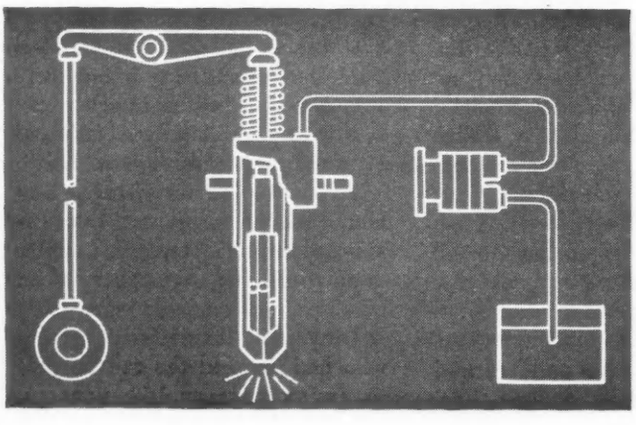
The Diesel Fuel System

INJECTION . . . IGNITION . . . COMBUSTION . . .

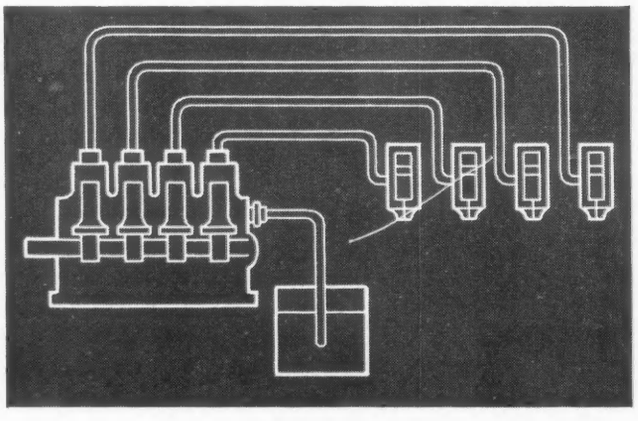
THE PRESENT high standards of the diesel engine as applied to automotive work have not come about by accident. Indeed, it has taken many years to develop a solid injection engine which will make the most efficient use of its fuel and at the same time provide the smoothness, versatility, high speed and horsepower required of the trucking industry. As a result of constant tests and research, each manufacturer today has his own ideas as to how to best atomize, vaporize, heat and disperse the fuel so that it will mix with air under high pressure in the combustion chamber within the shortest period of time.

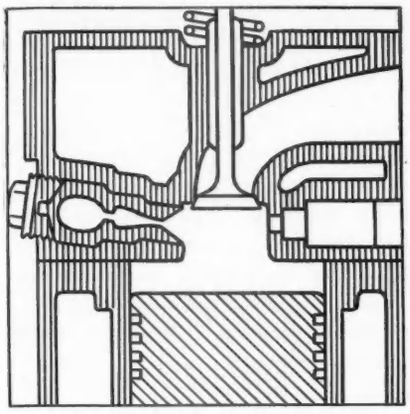
Here are some of his problems. In the combustion process there must be a delay period at which time the first particles of fuel are heated to the self-ignition temperature. This lag depends upon the air temperature in the

The unit injection system has separate units driven by camshaft to meter, pressurize and time fuel to the requirements of the engine



In the pump injection system individual pumps supply fuel under high pressure to injectors. Pumps meter charge and control the timing





The energy cell system locates cavity opposite injector, where fuel spray enters and pilots combustion as it is released into the chamber

In this third of a series of articles on diesel engines, methods used by manufacturers for increasing turbulence, limiting pressure rise and improving combustion efficiency are discussed

By M. K. Simkins

Technical Editor, Commercial Car Journal

ASPIRATION . . .

cylinder, the extent of the fuel mixture, the ignition quality of the fuel. High temperatures and pressures increase the ignition delay period. Also the mixture of the fuel particles with air is affected by the degree of atomization of the fuel oil and by its ability to penetrate the compressed air within the chamber. Thus it has been necessary to increase the turbulence in the chamber through design of the intake or the combustion chamber in order to improve dispersion and mixing, and to shorten the ignition delay period.

During the period of burning of the fuel particles which have been injected during this delay period, pressure tends to rise rapidly due to the fact that a portion of the fuel charge has accumulated and ignites at once. This rapid pressure rise resulting from the explosion causes undue pressures on pistons, rods and bearings, and an audible knocking results. This condition is more acute in high speed designs due to the short time interval in which injection and combustion must occur.

Diesel makers have evolved several methods of controlling the pressure rise in the combustion chamber and so smoothing out the power impulses. At the same time special design combustion chambers provide for increased turbulence of the charge, while special injection techniques aid in the mixing of the fuel with the air under high pressures. The open chamber, the air cell, the anti-chamber, the turbulence chamber are individual answers to these problems. While the combustion system as well as the injectors are selected by the manufacturer as most efficient for the particular engine, the fleet operator may be interested in looking over the field to see what has been done to stabilize the performance of his engines.

In the open chamber combustion system the fuel is injected through several orifices in the nozzles which are placed directly over the pistons. Turbulence is obtained through the design and location of the orifices. In some engines turbulence is increased through special design of the piston head, through modified intake porting or similar methods. The GM two-cycle diesel is of this type.

Other designers have resorted to turbulence chambers in a move to improve fuel distribution and atomization. In this system most of the air charge is forced in a whirling motion into a special chamber built into the cylinder head and connected to the main chamber through a restricted passage. Near the end of the compression stroke, when injection occurs, the air trapped in this chamber re-enters the main chamber to aid

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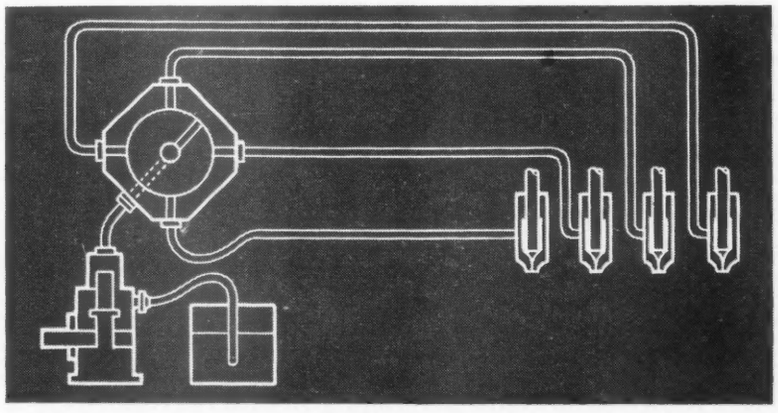
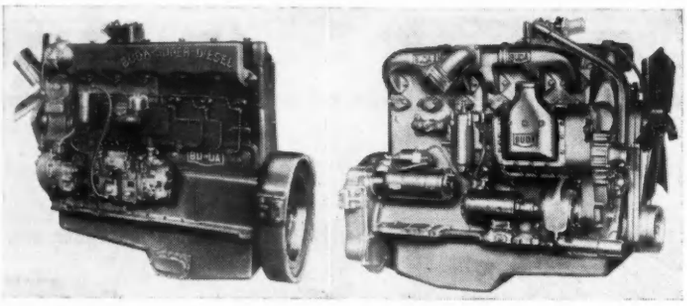
In the distributor system fuel is supplied under low pressure to a distributor which directs it to each injector through a central system





LEFT. Model 6-DAS-844 diesel engine as seen from left side. RIGHT. Supercharger shown mounted on right side

BUDA

Develops Three NEW DIESELS

Mono-lub combustion chamber with energy cell and aluminum parts to reduce weight are incorporated in 161 Series of diesel engines

THREE new 161 Series heavy-duty, 4-cycle, vertical, overhead valve, solid injection diesel truck engines, featuring a new mono-lobe Dyna-Swirl combustion chamber, have recently been developed by The Buda Co. of Harvey, Ill.

Designated the 6-DA-779, 6-DA-844 and 6-DAS-844 Supercharged, the models develop 185, 215 and 280 hp respectively. They are all six-cyl diesels with practically the same mounting dimensions and are built on the same 161 Series production line.

All three engines have the same bore of 5¼ in. The 779 engine, which has a displacement of 779 cu-in., has a stroke of 6 in. Both of the 844 engines have a displacement of 844 cu-in. and a stroke of 6½ in.

Combustion Chamber Characteristics

THESE DA engines have a new special mono-lobe Dyna-Swirl combustion chamber, which according to the manufacturer, enables them to develop increased hp. In addition, the Buda controlled turbulence, low pressure combustion system is said to insure thorough utilization of the fuel so that there is no wasted fuel in the form of heavy black smoke. The low, more uniform pressure in the cylinder makes for smoother performance with less wear of moving parts.

Essentially the combustion system is similar to the previous Lanova slow pressure combustion system except that a mono-lobe chamber is used instead of the double lobe. The energy cell incorporated in the double lobe chamber is also retained in the mono-lobe chamber.

Pistons, Valves and Crankshaft

THE ALUMINUM alloy trunk-type pistons are equipped with five piston rings, four located above the piston pin and one below. Both intake and exhaust valves are located in the cylinder head. The intake valve is made of chrome nickel steel and is 2 in. in diameter. The exhaust valve, with a silichrome XB stem and austinitic steel head, has a clear diameter of 1⅞ in.

The crankshaft is completely counterbalanced. Made of special open hearth forged steel, heat treated, the shaft has all journals "Tocco" hardened. There are seven main bearings. Shaft is drilled for pressure lubrication to connecting rod bearings and connecting rods are rifle drilled for piston pin lubrication. Engines are provided with torsional vibration dampeners.

Aluminum Parts

A LARGE number of the engine parts such as intake manifolds, compressor brackets, oil cooler housing, gear housing and covers are made of aluminum to reduce the total weight of the engine. Cast iron is optional material for these parts.

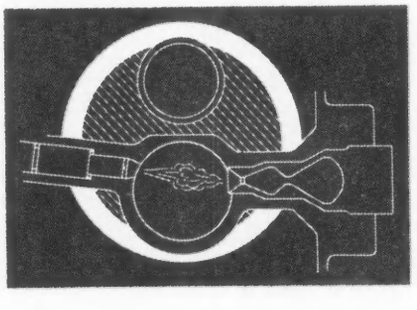
Supercharger for 6-DAS-844

THE supercharger for the model 6-DAS-844 engine is of the positive displacement type and employs helical cut gears to reduce noise. Mounted on the right side of the engine, the unit is gear driven. It is said to need no attention except for periodic lubrication.

Optional Equipment

OPTIONAL equipment available at extra cost are extra air cleaners, S.A.E. No. 0 flywheel housing, S.A.E. tachometer drive, scavenger oil pump for angle operation, 12 cu-ft, 2-cyl air compressor and front sump oil pan.

Mono-lube combustion chamber showing layout and position of energy cell in reference to pintle type fuel nozzle. At injection oil spray flows across chamber and part enters energy cell. Ignition beginning in center of chamber reaches energy cell and ignites mixture therein. Rapid combustion in cell builds up high pressure causing ejection of gases from the cell into the main combustion chamber. Swirling motion is produced resulting in thorough mixing of fuel and air and uniform combustion in the main chamber



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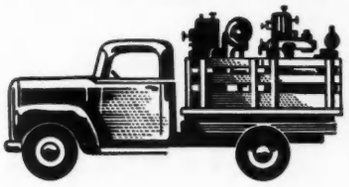

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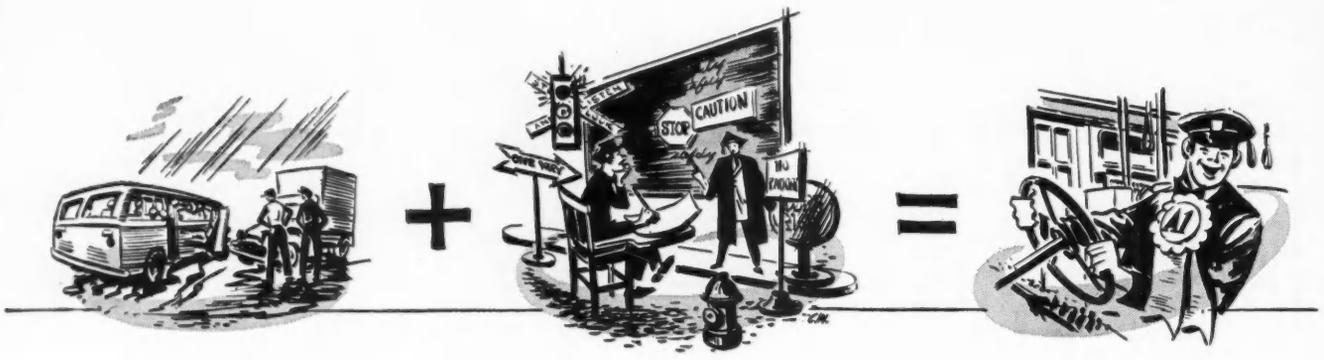

DRIVER RETRAINING

Cuts Accidents by 46%

New York fleet adopts specialized training to correct specific faults; refresher courses for new drivers, accident repeaters and older men

By Richard H. Daily
Traffic and Safety Director
Greater New York Safety Council, New York City

SAFETY EXPERTS agree that a fleet only can be as good as its selection and training programs. This, we have learned by experience, is true; also that both good selections and training programs are vital. Some fleet owners, however, fail to realize the importance of continued follow-up and retaining programs. They fail to agree that training should continue, after the initial employment period, on a regular and systematic basis.

It is human nature that a person must be refreshed periodically in order to retain certain important working rules and regulations, especially concerning those facts and actions that are used only during certain emergencies. Some individuals are more apt to forget than others, and it is extremely difficult to choose those with good retaining qualities at the time of employment.

There are specific weaknesses among certain fleet drivers that create accident producing situations. As long as such human weaknesses are present among men and women, driver retraining through refresher schools and such methods, cannot be left out of a modern transportation program. Such will continue to be vitally important as long as it is necessary to purchase costly equipment and pay accident claims. Thus far, no one has ever been able to keep a fleet moving and escape such problems.

Serious Driver Weaknesses

THE most serious driver weaknesses that help create accidents are as follows:

1. Lack of driving skill.
2. Constant use of undesirable driving habits.
3. Possession of undesirable attitudes.
4. Lack of general safety knowledge pertaining to company, city and state safety rules and regulations.

The fleet manager's problem, therefore, is to seek out drivers possessing such weaknesses, and offer them corrective safety substitutes through a specialized training and retraining program.

The refresher school for training is definitely a thorough program and is a very effective method for the purpose of making the much-needed personal contacts among the individual drivers. Accidents cannot be controlled unless periodical contacts are made with each driver.

Drivers Who Need Retraining

FLEET safety experts know that accidents most often occur among three specific groups of fleet drivers.

1. The first group is the new driver during his first year of service. This driver most often possesses such weaknesses as a lack of driving skill and the lack of knowledge. This driver also is, in most instances, poorly informed concerning company safety policies, rules and regulations.

2. The second group includes the repeater drivers. These drivers usually comprise from 5 to 15 per cent of the driving personnel, and have been known to become involved in as many as 50 per cent of all fleet accidents in a twelve-month period.

This group of drivers were, in many cases, employed during the war years when the labor market was badly strained, and when driver selection was a forgotten word. This group is by far the most difficult to

(TURN TO PAGE 138, PLEASE)

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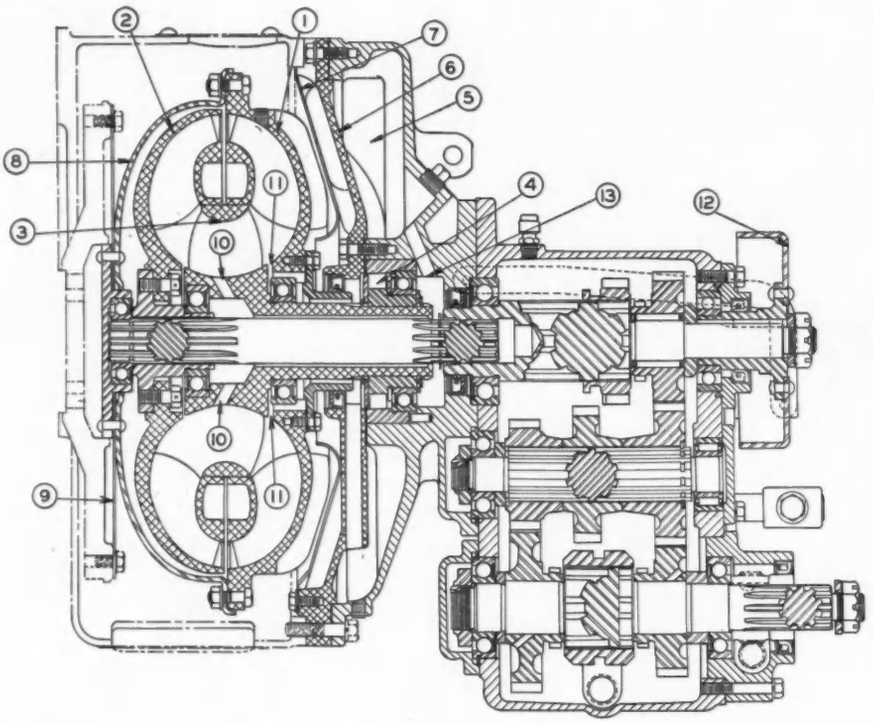
BEST IN NEW TRUCKS — BEST IN OLD TRUCKS



The converter assembly consists of: 1. pump element, 2. turbine runner, 3. stator runner, 4. over-running clutch, 5. oil cooler chamber, 6. finned cover, 7. pressed steel baffle, 8. pressed steel housing, 9. flexible steel spider, 10. drilled passages in hub of stator, 11. oil return passages, 12. external brake drum, 13. oil passage to cooler

FULLER CONVERTER

Applied to International Light Truck

Three-element converter coupler is used with special 2-speed transmission on LB-140 delivery

A JOINT announcement by International Harvester Co., and the Fuller Mfg. Co., describes a converter-coupling drive designed for the International LB-140 delivery models. The unit consists of the new Fuller converter-coupling in combination with a special two-speed transmission with offset drive shaft.

In design this converter-coupling is of three-element type having a single stator runner mounted between the turbine and pump elements. The converter-coupling embodies a number of new features. It is a self-contained package with an enclosed housing including a built-in- air-type oil cooler without outside plumbing connections. The unit has been simplified to the fullest extent in the interest of minimum cost and ease of maintenance and is notable for the absence of a pump for the hydraulic pressure system. In the interest of minimum cost, the pump and turbine runners are aluminum sand castings made by a unique technique with a one-piece core for the vane system of both elements. All three rotating elements are balanced individually to close tolerances so as to assure perfect balance at all speeds.

The three elements—the pump, turbine runner, and stator runner—are made of aluminum sand castings. The pump runner also has a series of integral vanes on its outer surface to serve as a centrifugal fan and thus provide air cooling for the unit. The stator runner has a long extension into the assembly, mounting an over-running clutch at its end, the function of the clutch being to lock up the stator automatically during periods of torque multiplication, and releasing it at the clutch point.

The air-cooled oil-cooler for this unit is contained in a cast iron body which is closed by means of an aluminum cover, serving as a means of rapid heat transfer for radiation air cooling. To further facilitate heat transfer the cover has a large number of integrally cast radiation fins. In addition, the unit contains a pressed steel baffle so arranged as to force all cooling air drawn by the centrifugal fan to pass over the radiating surface. The cooling air, in turn, is drawn into this space from the outside through peripheral slots between the baffle and flywheel housing.

The converter-coupling is contained within a pressed steel housing to which is riveted a flange carrying the inboard bearing, and a flexible steel spider which has a dual function of attaching the assembly to flywheel and at the same time taking up any possible misalignment in the entire mounting.

No special comment is needed on the operation of the converter-coupling itself, since the three-element unit is the simplest form known. The stator runner comes into play on starting and acceleration when torque multiplication is required, then free-wheels with the two main elements when the unit functions as a fluid coupling. Torque multiplication is of the order of 2.2 to 1.

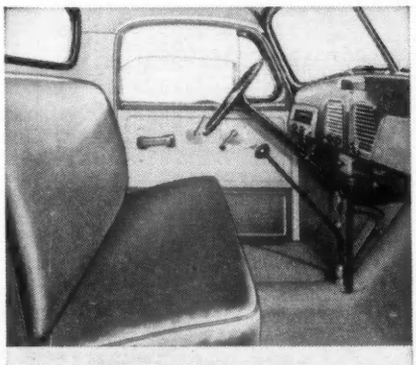
No pressure pump is required with this system, the pressure required for operating the torque converter being obtained simply from the expansion of fluid in the closed circuit. For all practical purposes the functioning of the cooling system is self regulating since oil cooling is required only during the converter phase of torque multiplication. Under these conditions the stator

(TURN TO PAGE 150, PLEASE)

2-ton shown with 15-foot van body— also available on 1½-ton chassis

Studebaker trucks set new records for earning power per mile!

The proof is on the cost sheets of many Studebaker truck owners!



America's finest truck cab! From enclosed safety steps to foot-regulated floor ventilators, the roomy Studebaker cab is truly de luxe. A wealth of wanted features that drivers like—all at no extra cost. Studebaker trucks come in sizes and wheelbases for a wide range of hauling requirements—2 ton, 1½ ton, 1 ton, ¾ ton and ½ ton models.

SOME owners write in and give us their actual figures on Studebaker truck economy. Still others just tell us generally that their Studebaker trucks are saving them far more money than they hoped.

Yes, all over America, exacting truck users by the thousands have good reason to rate their Studebaker trucks outstanding in pulling power, staying power and earning power.

One owner tells another—and demand for the husky, handsome, powerful new Studebaker trucks keeps growing month by month.

New in ruggedness all the way through, Studebaker trucks stay remarkably free from the need for serious repairs. What's more, they're engineered to conserve gasoline remarkably.

The great Power-Plus and Econo-miser Studebaker truck engines are tops in high torque performance as well as in consistent thrift.

Stop in at a nearby Studebaker dealer's and get straight-out proof of the savings that rugged, reliable Studebaker trucks are effecting on your kind of work.

STUDEBAKER TRUCKS

NOTED FOR LOW COST OPERATION

The Studebaker Corp'n, South Bend 27, Indiana, U. S. A.

Truck Specifications

Showing New Models and Revisions Since Last Issue

The specifications of new truck models and revisions in current models noted below have been received from truck manufacturers since publication of the Commercial Car Journal Truck Specifications Table in the June, 1950 issue. Readers are requested to make note of these changes. The complete table will be included in August.

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

Dodge

Two additional six-wheeler trucks have been added to the line. Details may be found in the accompanying table.

Federal

A number of changes have been incorporated in the regular Federal line including optional diesel engines on many models. Consequently specifications for this line can be found in the accompanying table.

Additional corrections to the Six-Wheeler series include optional diesel engines for Models 663MA, 664MAB, 664MA using the Continental R6602 gasoline engine and Model 645M using the Continental T6427F gasoline engine.

The Timken T50 torque divider is now optional on those models equipped with the Timken T70 2-speed.

Minimum wheel base for Models 663MA, 664MAB and 664MA is now 179 in.

Timken rear axles SW3010, SD3010 and SW3013 are now optional on Model 663MA. Timken rear axle SW3010 is optional on Model 645M.

Studebaker

Two new additional models have been added to the Studebaker line. Full specifications can be found in the accompanying table.

See June Issue, Page 85 for Specifications of other Models

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES Standard Front and Rear	TIRE SIZES D-dual rear S-single rear Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Speeds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operation	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Dodge R6-Wheeler																															
2	B-2-YX,B-2-YXL		154	190	40000		10.00/20D	10.00/20D	Own T-199	6-4x5	377	6.5	330	154-3000	7-3x11.235	Y	Cla 290-V2	5	T-5D-3010P	5.27	H	6.66-5.83	Tim FD-900	T-6-I-A	950	1471	C	84	10½x3½x½	CP
3	Federal		135	194	14500		6.50/20D	7.50/20	Here JXEF	6-3½x4½	245		184	93-3400	7-2½x10½	N	WG T9A	4	T5354TDPH	5.15	H	6.80-6.20	Tim 3000HX	L41HV	310	482	a	66	8½x2½x¼	T
4		15M	139	250	15500		7.50/20D	7.50/20	Her JXEF	6-3½x4½	245		184	93-3400	7-2½x10½	N	WG T9A	4	Tim E300DPH	6.32-8	RF	6.66-5.66	Tim 3000HX	L41HV	310	482	a	66	8½x2½x¼	T
5		16M	139	250	15500		7.50/20D	8.25/20D	Her JXBF	6-3½x4½	245		184	93-3400	7-2½x10½	N	WG T9A	4	Tim E300DPH	6.32-8	RF	6.13-6	10 Tim 300-0HX	L41HV	310	482	a	66	8½x2½x¼	T
6		16M2	139	250	15500		7.50/20D	8.25/20D	Her JXBF	6-3½x4½	265		192	98-3200	7-2½x10½	N	WG T9A●	4	Tim F100DPH	6.32-8	SF	** -6	20 Tim 3000H	LT41HV	314	532	a	66	9½x3½x¼	T
7		18M	139	250	15500		7.50/20D	8.25/20D	Her JXBF	6-3½x4½	265		192	98-3200	7-2½x10½	N	WG T9A●	4	Tim F100DPH	6.32-8	SF	** -6	20 Tim 3000H	LT41HV	314	532	a	66	9½x3½x¼	T
8		18M2	139	250	15500		7.50/20D	8.25/20D	Her JXBF	6-3½x4½	265		192	98-3200	7-2½x10½	N	WG T9A●	4	Tim E300DPH	6.32-8	dF	6.13-6	10 Tim 3000H	LT41HV	314	532	a	66	9½x3½x¼	T
9		1801T	136	250	17000		8.25/20D	9.00/20	Her JXCF	6-3½x4½	282		212	103-3200	7-2½x10½	N	WG T9A●	4	Tim H100DPH	6.32-8	SF	** -6	80 Tim 3100H	LT41HV	346	583	a	66	9½x3½x¼	T
10		1802T	136	250	19000		8.25/20D	9.00/20	Her JXCF	6-3½x4½	282		212	103-3200	7-2½x10½	N	WG T9A●	4	Tim H300DPH	6.32-8	dF	6.13-6	15 Tim 3100H	LT41HV	346	583	a	66	9½x3½x¼	T
11		2502T	136	250	19000		9.00/20	9.00/20	Her JXCF	6-3½x4½	282		212	103-3200	7-2½x10½	Y	Cla 205V●	5	Tim L100DPH	6.32-8	SF	** -6	83 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
12		2901T	136	250	21500		10.00/20	10.00/20	Her JXDF	6-4½x4½	320		250	115-3100	7-2½x10½	Y	Cla 205V●	5	Tim L300DPH	6.32-8	dF	6.13-6	22 Tim 32514H	LT41HV	466	720	a	66	9½x3½x¼	T
13		2902T	136	250	21500		10.00/20	10.00/20	Her JXDF	6-4½x4½	320		250	115-3100	7-2½x10½	Y	Cla 205V●	15	Tim L100DPH	6.32-8	SF	** -6	83 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
14		2904T	136	250	21500		10.00/20	10.00/20	Her JXDF	6-4½x4½	320		250	115-3100	7-2½x10½	Y	Cla 205V●	15	Tim L300DPH	6.32-8	dF	6.13-6	22 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
15		3001T	136	250	22000		10.00/20	10.00/20	Here JXLDF	6-4½x4½	339		272	131-3200	7-2½x10½	Y	Cla 205V●	5	Tim L100DPH	6.32-8	SF	** -6	83 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
16		3002T	136	250	22000		10.00/20	10.00/20	Here JXLDF	6-4½x4½	339		272	131-3200	7-2½x10½	Y	Cla 205V●	5	Tim L300DPH	6.32-8	dF	6.13-6	22 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
17		3004T	136	250	22000		10.00/20	10.00/20	Here JXLDF	6-4½x4½	339		272	131-3200	7-2½x10½	Y	Cla 205V●	15	Tim L100DPH	6.32-8	SF	** -6	83 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
18		35M	143	203	22500		10.00/20	10.00/20	Con T6371F	6-4½x4½	371		290	140-3000	7-2½x13½	Y	Cla 290VO	5	Tim L100DPH	6.32-8	SF	** -6	83 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
19		35M2	143	203	22500		10.00/20	10.00/20	Con T6371F	6-4½x4½	371		290	140-3000	7-2½x13½	Y	Cla 290VO	5	Tim L300DPH	6.32-8	dF	6.13-6	22 Tim 32514H	LT41HV	466	820	a	66	9½x3½x¼	T
20		45M	143	203	26000		10.00/20D	10.00/24	Con T6427F●	6-4½x4½	427		347	158-2800	7-2½x13½	Y	Cla 290VO	5	Tim S300P	6.53-8	SF	** -7	53 Tim FD-900	Tw41A	606	933	a	66	10½x3½x¼	T
21		45M2	143	203	26000		10.00/20D	10.00/24	Con T6427F●	6-4½x4½	427		347	158-2800	7-2½x13½	Y	Cla 290VO	5	Tim S300P	6.53-8	HyF	R 6.53-8	53 Tim FD-900	Tw41A	606	933	a	66	10½x3½x¼	T
22		65M	155	203	30000		11.00/22D	11.00/24	Con T6427F●	6-4½x4½	427		347	158-2800	7-2½x13½	Y	Cla 290VO●	15	Tim S200P	6.53-8	2F	R ** -7	08 Tim FD-900	Tw41A	722	1051	a	72	10½x3½x¼	T
23		65M2	155	203	30000		11.00/22D	11.00/24	Con T6427F●	6-4½x5½	501		385	148-2400	7-2½x14½	Y	Fu 5A650	5	Tim S200P	6.53-8	HyF	R 6.53-8	53 Tim FD-900	Tw41A	722	1051	a	72	10½x3½x¼	T
24		66M	143	203	32000		11.00/22D	11.00/24	Con 22RF●	6-4½x5½	501		385	148-2400	7-2½x14½	Y	Fu 5A650	5	Tim S300P	6.53-8	HyF	R 6.53-8	53 Tim FD-900	Tw41A	722	1051	a	72	10½x3½x¼	T
25		66M2	141	201	33000		11.00/22D	11.00/24	Con R6602F●	6-4½x5½	602		466	200-2600	7-3¼x14½	Y	Fu 5A650	5	Tim S300P	6.53-8	HyF	R 6.53-8	53 Tim FE-900	We41A	722	1051	a	72	10½x3½x¼	T
26		663MA	153	201	33000		11.00/22D	11.00/24	Con R6602F●	6-4½x5½	602		466	205-3000	7-3¼x14½	Y	Fu 5A650	15	Tim S200P	6.53-8	HyF	R ** -7. 8	Tim FE-900	We41A	722	1051	a	72	10½x3½x¼	T
27	Studebaker	2R16B	131	195	15000		6.50/20D	8.25/20	Own 4R	6-3½x4½	245	7.0	205	102-3200	4-2¼x5	N	Own 678790	4	Own 675732■		SF	H 6.66-5.83	Own 674484	LH41M	294	442	Ce	TX	60¼	8½x2½x¼	T
28		2R17B	131	195	17000		7.50/20D	9.00/20	Own 4R	6-3½x4½	245	7.0	205	102-3200	4-2¼x5	N	Own 678794	4	Own 675571♦♦		HY	H 6.80-6.20	Own 674484	LH41A	367	553	Ce	TX	60¼	8½x2½x¼	P

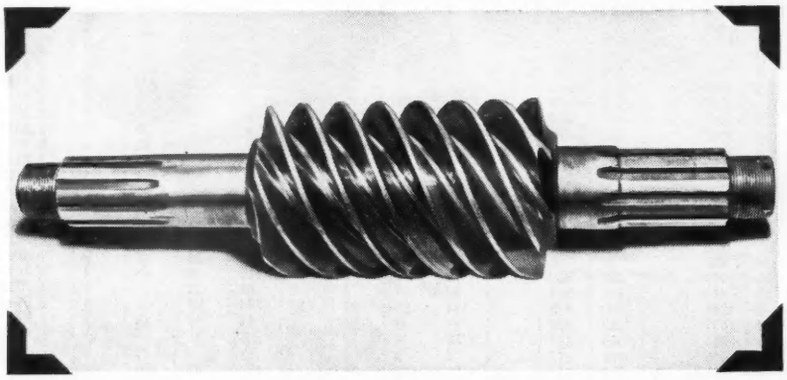
‡ Aux. Transmission Spicer 6231B, three forward speeds. ♦ Five speed transmission optional. § Aux. Transmission Spicer 703F, three forward speeds. ■ 2-speed 6.13–8.10 and H. D. 6.20 or 6.80 optional.
● Overdrive optional. ▼ Diesel Engine optional. ♦♦ For shorter wheelbases—9x3½x¼. ♦♦ 2-speed 6.13–8.10 optional.
† For shorter wheelbases—10x3½x¼. † Radius Rods optional.

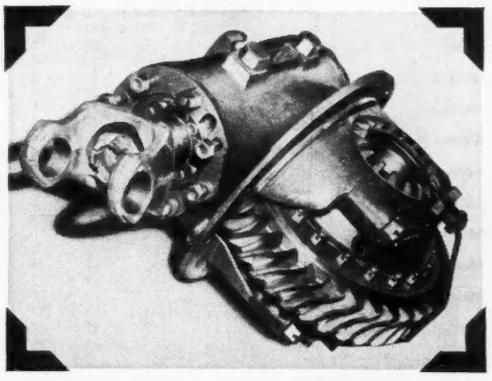
STANDARD ENGINEER'S REPORT

DATA

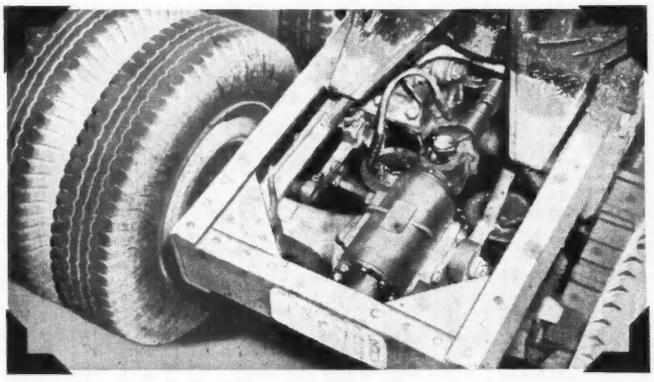
LUBRICANT	R.P.M. Gear Lubricant (compounded)
UNIT	"Semi" diesel Truck
PART	Differential carrier assembly—Timken Worm 3002
CONDITIONS	Long Distance freight haul—high speeds
LOCATION	San Francisco—Los Angeles
FIRM	Hills Transportation Co., San Francisco

Practically no wear on worm gear in 235,000 miles





IN A TRANSPORT TRUCK DIFFERENTIAL lubricated with RPM Gear Lubricant (Compounded), this worm gear had been in constant service for 235,000 miles when the unit (right) was overhauled. Teeth were still in excellent condition as the picture shows. The gear was replaced because of a loose spline. This was only the second overhaul for the differential unit in 648,326 miles of truck service.



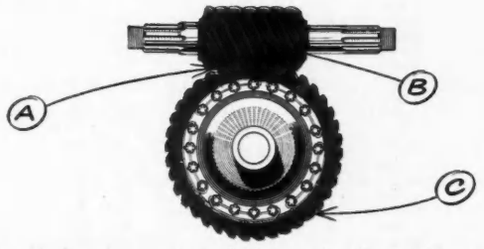
TWO "DROP-IN" UNITS of the same type were used together in the tandem differential of this transport truck. They pulled average daily loads of twenty tons on the highway in regular common-carrier service.

REMARKS: Because RPM Gear Lubricant (Compounded) has very high oiliness qualities and stability, it is especially valuable for the lubrication of bronze worm gears. It also meets the severe service conditions in transmission gear sets and conventional differentials. (For hypoids of all kinds, RPM Multi-Service Gear Lubricant is recommended.)

RPM

TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Gear Lubricant (Compounded) prevents wear in worm and conventional gears



A. Made from paraffine stocks with special compounds that help provide a tough film — gives extra tooth protection, withstands shock and overloads.

B. Has high resistance to oxidation — resists deposit formation, assures lubrication in high temperatures.

C. Contains foam inhibitor — prevents high gear-case pressures.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Barber, N.J., Chicago, New Orleans
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

New Truck Registrations by Makes by States*

STATE		Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Inter-na-tional	Ken-worth	Mack	Pon-tiac	Reo	Ster-ling	Stude-baker	White	Willys	All Others	Total
Alabama	April			801	3		82		680		224	121		19	3	2		102	22	24	1	2,084
	4 Mos.	2		2686	7	9	579	3	2362		656	462		59	9	10		381	66	148	5	7,444
Arizona	April			202	1	1	22		152		49	46	1	2	1	1		28	1	23		530
	4 Mos.			643	3	4	153		571		183	148	6	6	1	3		96	8	59	7	1,891
Arkansas	April			852	3		151		706		261	148		4	8			107		33		2,273
	4 Mos.			3191	8		731	1	2412		750	555		17	14	8		524		182	1	8,394
California	April	12		1918	17	36	163	2	1303	2	456	300	10	17	3	5	6	230	16	81	7	4,582
	4 Mos.	30		7506	81	147	1212	12	5302	5	1588	1226	31	65	22	33	28	924	85	295	70	18,662
Colorado	April			481	4	2	48		368	1	79	69	3			3		57	6	42	8	1,171
	4 Mos.			1803	17	13	308	3	1109	1	323	358	4	10		6		248	15	142	17	4,375
Connecticut	April	3	5	226	15	11	40	6	266	1	69	81		15	5	2		37	13	14	2	811
	4 Mos.	15	20	751	30	27	185	19	740	2	194	216		60	9	8	8	94	42	51	11	2,482
Delaware	April			116	2		12		70		20	30				1		9	1	3	1	265
	4 Mos.	3	5	351	5	4	61		343		63	86		2	4	2		35	13	10	5	992
District of Col.	April		1	125	5	5	15	3	124		31	26		4	2	4		4	2	4		355
	4 Mos.	7	1	313	10	18	73	5	242		76	76		7	4	8		12	5	10	2	869
Florida	April	1		686	16	3	142	1	597		112	156		25	2	8		137	14	72	4	1,976
	4 Mos.	2	1	2189	45	26	670	8	2090		391	466		120	8	30		496	50	214	12	6,818
Georgia	April			652	4	4	162	1	730		140	189		19	1	10		107	20	33	2	2,074
	4 Mos.	1		3427	27	15	1078	3	3528	1	809	941		84	10	41		643	109	201	9	10,927
Idaho	April			294	8		48	1	222		99	110	15	5	1	2		45	2	20	1	873
	4 Mos.			673	13		151	3	486	2	211	232	20	9	1	6		136	11	83	14	2,051
Illinois	April	13	1	1606	36	12	276	3	1243	4	324	544		23	9	14	1	167	45	58	6	4,385
	4 Mos.	31	2	5205	140	49	1458	10	4084	5	1056	1941		94	30	49	2	641	198	173	24	15,192
Indiana	April	1		843	14	3	106	2	757	1	154	316		8	7	16		144	35	37		2,444
	4 Mos.	2	2	2631	28	15	618	6	2590	2	522	1029		32	17	27		497	112	107	20	8,257
Iowa	April	1		1127	17	6	117		762		138	348		6	5	1		92	16	32	4	2,672
	4 Mos.	1		3419	47	23	623	1	2424		447	1099		28	8	19		348	41	74	7	8,607
Kansas	April			751	9		87	1	497		164	221		1	5	6		60	7	22	1	1,832
	4 Mos.			2284	20	8	371	1	1632		481	654		1	12	21		205	20	65	2	5,777
Kentucky	April	1		1054	8	9	118	2	826		312	198		6	7			101	11	61	3	2,717
	4 Mos.	1		2867	33	19	498	6	2147		735	633		12	13	10		307	40	193	5	7,519
Louisiana	April			535	4	3	61		532	1	166	126		2	2	3		86	7	27	2	1,557
	4 Mos.	1		2073	20	3	521	3	2029	1	649	455		12	8	7		336	22	113	11	6,324
Maine	April		1	251		1	37		131		59	71		4	2	1		28	2	21	1	610
	4 Mos.	4	7	995	3	3	243		576		315	316		40	10	7		142	14	84	4	2,763
Maryland	April	4	16	544	12	9	126	10	487		74	146		26		6		34	23	6	3	1,526
	4 Mos.	5	32	1329	22	20	377	25	1034		234	301		62	7	17		113	70	43	9	3,700
Massachusetts	April	26	9	617	20	17	93	1	442		120	151		32	11	3	8	91	37	24	1	1,703
	4 Mos.	66	40	1606	55	37	572	6	1286		340	430		114	31	27	17	233	85	64	6	5,015
Michigan	April	3		1586	16	29	110	4	1431		253	228		28	2	29		94	26	30	2	3,871
	4 Mos.	10	1	4984	41	78	805	23	4483	1	826	839		68	6	70		355	91	78	15	12,774
Minnesota	April			1032	7	7	137	2	845		189	314		4	3	8		181	8	20		2,757
	4 Mos.	1		2819	35	22	587	9	2227	9	465	920	5	21	15	14		552	42	70	26	7,839
Mississippi	April			599	2		69	1	518		184	102		2	2			73	11	15	2	1,580
	4 Mos.			2250	7		468	4	1768		702	408		15	12	8		343	23	84	6	6,098
Missouri	April			1360	7	10	224		938		305	265		36	5	11		124	20	26	6	3,337
	4 Mos.	4		3852	22	40	797	2	2576	1	825	826	3	65	7	26		431	93	101	28	9,699
Montana	April			247	6		71		170		59	89	4			3		36		57		742
	4 Mos.			747	15		194	2	464	1	157	280	5	3	1	10		132	4	181		2,196
Nebraska	April			527	17		42	1	429		116	161		4	2	1		55	9	25	3	1,392
	4 Mos.			1819	56	2	300	1	1487	7	312	566		7	5	13		244	24	129	10	4,982
Nevada	April			48	1		3		36		15	11						6		4		124
	4 Mos.			164	2		23		114		65	31			1			25		19	1	445
New Hampshire	April	2	3	183	4	4	60	1	140		63	78		18	2	3		32	3	13		609
	4 Mos.	4	3	325	5	4	127	2	253		112	121		25	3	3		57	7	24		1,075
New Jersey	April	21	16	916	33	36	117	15	693		207	239		58	10	9	3	63	43	57	3	2,539
	4 Mos.	41	77	2518	108	85	691	34	2283	5	705	708		182	67	24	6	251	126	149	15	8,075
New Mexico	April			309			37		162		87	52		3				38	3	23	4	718
	4 Mos.	1		1019	1		188		466	1	279	143	4	9		1		178	11	70	11	2,382
New York	April	158	69	1727	60	29	293	9	1175	5	405	445		126	11	11	1	140	73	74	39	4,850
	4 Mos.	267	270	5953	356	129	2301	55	3987	27	1684	2218		701	56	142	24	702	402	441	123	19,838
North Carolina	April	3	3	888	2	11	112	3	700		138	135		49	4			89	21	29	12	2,199
	4 Mos.	22	3	2846	14	21	620	8	2627		507	496		222	9	9	2	402	78	82	30	7,998
North Dakota	April			68	1		13		80		17	35		1				10		13		238
	4 Mos.			447	4		127	2	373		87	241		4	1	1		79		61	41	1,430
Ohio	April	5		1464	28	36	144	5	1196		304	451		49	8	19		122	86	31		3,958
	4 Mos.	33	5	5202	116	114	1117	33	4672	3	1069	1670		202	69	89		531	381	160	5	15,473
Oklahoma	April			834	1	7	124		661	2	239	214		5	1	5		92	20	28	2	2,235
	4 Mos.	1		2661	6	23	566		2020	4	664	638		27	8	25		302	54	107	5	7,111
Oregon	April	5		474	18	2	70	1	413		139	195	4	12				67	6	88	5	1,499
	4 Mos.	5		1393	32	10	292	2	1096		355	410	15	26		4		163	17	166	21	4,007
Pennsylvania	April	9	55	1706	38	13	302	14	1419		295	524		67	21	34	5	172	93	43	10	4,820
	4 Mos.	51	177	5053	119	36	1581	34	4419		1078	1671		300	60	112	10	546	272	200	34	15,753
Rhode Island	April	8		101	7	6	35		172		21	49		14		1	1	15	6	7	1	444
	4 Mos.	15	4	297	10	11	129	1	325		67	124		32	6	7	2	43	16	15	3	1,107
South Carolina	April	1		422		4	55	1	298		72	43		8	6	1		41	8	11	2	973
	4 Mos.	3		1392	3	7	336	1	1196	1	301	215		34	10	3		201	34	33	5	3,775
South Dakota	April			187	2	1	37		159		37	100			1	1		30	2	22	2	581
	4 Mos.			697	28	1	169	2	584	3	130	369	11	1	4	2		110	6	91	6	2,214
Tennessee	April																					
	4 Mos.																					
Texas	April	2		2306	15	3	340	3	1820		650	439	1	23	5	6		302	63	90	5	6,073
	4 Mos.	14	1	10070	53	22	2557	12	8094		2820	1917	6	95	28	30		1432	181	529	38	27,899
Utah	April			261	3	1	33		142		60	54	2	1	3	2		15	6	14		597
	4 Mos.			683	17	8	119		386	1	189	153	6	11	4	6		51	11	52	16	1,713
Vermont	April			91			35		63		39	32						8	2	33		303
	4 Mos.		3	290	1	3	158		195		131	135			1	5		41	3	69	4	1,039
Virginia	April	6	5	730	3	3	122	4	650	1	220	147		26	1	4		90	21	28	10	2,071
	4 Mos.	15	9	2491	7	22	561	11	2026	1	610	430		80	9	11		314	71	103	17	6,788
Washington	April			525	5	6	75		312		108	150	5	14	1	3	1	50	7	33	7	1,302
	4 Mos.	2		1404	14	21	298		883		318	450	22	44	6	7	2	145	19	96	37	3,768
West Virginia	April		1	331	1	2	40	2	272		78	42		7	1	3		24	4	55		863
	4 Mos.		2	1045	2	6	280	5	968		252	186		30	6	6		84	21	198	2	3,093
Wisconsin	April			691	9	8	87	1	539	2	126	217		5	7	10		55	36	16	11	1,820
	4 Mos.	4		2336	23	26	471	6	1763	22	381	764		36	18	24	1	286	60	82	35	6,338
Wyoming	April			167	1		28	1	96		38	32				1		13	1	34		412
	4 Mos.			458	5	2	111	1	243		127	113	1	1	1	2		50	4	88		1,207
Total	April, 1950	285	185	33459	485	340	4721	101	26424	20	7515	8240	45	778	170	253	26	3703	858	1566	173	89,347
Total	April, 1949	165	137	27936	491	333	9350	118	14371	36	6570	7147	40	494	52	339	19	4479	683	3305	321	76,386
Total	4 Months, 1950	667	666	112294	1720	1134	26824	365	89758	106	25524	28818	141	3085	635	994	102	14699	3091	5850	743	317,208
Total	4 Months, 1949	704	561	105830	2041	1172	36055	471	51438	150	23107	29502	146	1942	70	1493	72	17704	2775	14337	1546	290,916

* Data from R. L. Polk & Co.

No lost space in this body.

This Giant Mobile Parts Store carries 3200 different items. LS body built by Winter-Weiss, Denver.

WHATEVER YOUR HAULING NEEDS

LS body for this ambulance for small animals was built by Watkins Body Corp., Buffalo, N. Y.

It Pays to Use a LINDSAY BODY* *Built for the Job*

Whether you operate one truck or a fleet—you, too, will find that it pays to use a Lindsay Structure body *built for the job.*

With Lindsay Structure you not only get a body built to fit your specific needs, but you also get the "bonus" advantages of this patented method of construction—light weight with great strength . . . long life . . . ease-of-repair.

There is a body manufacturer servicing your locality who specializes in using Lindsay Structure for his truck bodies. Ask him to show you why one of these handsome all-metal bodies built for *your* job is an investment that pays dividends for years and years in efficient, low-cost delivery operation.

If you do not know your nearby Authorized LS Body Manufacturer, write us for his name and address. It will pay you to meet him.

*A truck body built of Lindsay Structure

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U. S. Patents 2017629, 2263510, 2263511
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free PUBLICATIONS

A selected list of the latest literature—catalogs, pamphlets, charts—chosen to help fleetmen improve operation and maintenance.

FOR YOUR CONVENIENCE USE THIS POSTCARD

L31. Fuel Booklet

"Contest Fuel at its Best," is a new booklet written in semi-technical style, providing the user of fuel with a wealth of authentic information which is essential for obtaining maximum engine performance under all conditions. It covers such common fuel problems as age deterioration, fuel spoilage, oxidation, souring, curdling, aldehyde formation and troubles of the "home brewer."

Among the principal subjects covered are: Selection and test methods for fuel and oil with regard to compression, atmosphere, humidity and length of piston stroke, engine failure and track casualties due to improper or poor quality fuel and oil, easy to perform tests showing troublesome factors common in "home brew" mixed fuels, fuel classification chart, use of liquid oxygen, hydrogen, supercharging fuel, impurities and moisture variation in alcohol and raw fuel materials.

Copies will be sent free by writing L31 on the accompanying postcard.

L32. Welding News

Here is an interesting copy of a booklet designed for men in the welding field. Its 24 pages are chuck full of welding notes that will provide handy tips to the welder.

Some of the devices made up in the shop by welders include a snow plow made from an oil drum, a tractor made from discarded parts, a ladder made from water pipe, and many other homemade devices. A story on flame cutting and welding will be found useful to the repair man, while other articles dealing with arc welding techniques will reveal many ideas that can be incorporated into fleet shop work.

This booklet can be had for the writing of L32 on the postcard.

L33. Valve Study

Exhaust Valve Rotation is the title of this 16-page illustrated booklet covering the use of mechanical devices to improve valve life. Three methods of rotating valves are discussed—the Eaton Free-Valve, the Thompson Rotovalve and the Thompson Rotocap. Cutaway drawings show nomenclature and principles of operation.

Of interest to the mechanic is the section covering causes of valve failures. Here by means of illustrations and captions such troubles as stem deposits, seat deposits and distortion are discussed. One section is devoted to showing test results with rotating valves. Conclusions are to the effect that rotated valves are superior for engines operated under severe conditions.

Just write L33 on the free postcard for a copy of this booklet.

L34. Valve Manual

A valve service manual for all Ford-built engines has been re-edited and brought up to date and is available to the fleet field. It contains servicing procedures, diagrams, tolerance charts and service tool requirements in complete detail. It is pocket size, containing 30 pages, 58 illustrations. A copy may be procured by writing L34 on the postcard.

Late Product Flashes

Important features of their new 14-in. aluminum pipe wrench are emphasized on a counter display recently introduced by **J. H. Williams & Co.**, Buffalo, N. Y.

A new all-steel 360 deg swivel coupler for grease guns has just been placed on the market by **Universal Lubricating Systems, Inc.**, Oakmont, Pa.

A new line of v-belts, named "HY-T," incorporating a chemically produced fibre of high-strength, low stretch and shock absorbing qualities, has been developed by the **Goodyear Tire & Rubber Co.**

Addition of a new battery cell tester Model CC-3 to the "King" line of ignition test equipment is announced by the **Electric Heat Control Co.**

The new low cost AMP hand tool incorporating jaws for crimping solderless terminals with a "cutting," "stripping" and "bolt-shearing" device is distributed by **Aircraft-Marine Products, Inc.'s, Independent Distributor Div.**, Harrisburg, Pa.

Guaranteed Parts Co., Inc., Seneca Falls, N. Y., announces their new line of carburetor parts and kits.

New Rub-Bub Neoprene flexible radiator hose is announced by **Samuel Moore & Co.**, Mantua, Ohio.

FOR YOUR CONVENIENCE USE THIS POSTCARD

New PRODUCTS

Illustrating and reviewing newest developments in parts, accessories, shop equipment and tools. For more information use the attached postcard.

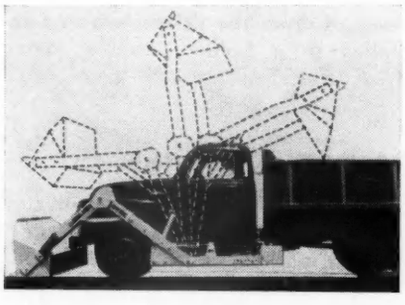
P213. Liquid Wax

A new liquid wax, Car-Plate, requires no polishing, buffing, or rubbing and is said to give a higher luster and longer-lasting wax protection than paste auto wax.

It is wiped on the clean finish and the haze which appears within a few minutes is merely wiped off with fingertip pressure, leaving a bright luster and a protective wax film. After the first application light dirt and dust can be wiped from the finish left smooth by the liquid wax. S. C. Johnson & Son, Inc., Racine, Wis.

P214. Truck Self-Loader

The new self-loader for dump trucks permits the driver to do his own light digging, grading, scooping up of materials, loading, hauling and unloading independent of any outside assistance. Double jointed, the loader is operated by independent hydraulic cylinders con-



trolled from two levers in the cab. Hydraulic pump is driven from a power take-off through a propeller shaft. Shovel capacity is 1500 lbs and the shovel drop range is 8¼ in. below ground surface. Ernest Holmes Co., Chattanooga, Tenn.

P215. Moisture Eliminator

A pet cock, called the Drain Master, operates on the build-up and relief of pressure, automatically ejecting water and oil from air brake systems. It is 2 in. high, weighs 3½ oz and is made in two models. Master Equipment Corp., Dayton, Ohio.

P216. Gas Torch

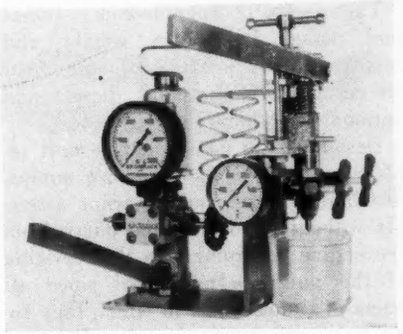
The butane-propane gas torch, the Precision Torch, weighs only 4 lb loaded, and is capable of generating heat up to 2200 degrees. The torch has no hoses, tanks or moving parts of any kind and is totally self contained in a cylinder 10½ in. high and 2½ in. in diameter. It can easily be filled from a bottled gas tank. One filling gives seven hours of continous operation with constant pressure. Precision Engineering & Mfg. Co., Saginaw, Mich.

P217. Heaters

Model 300 Arvin car heater, a fresh air type through the addition of an oversize core, is said to contain more inside heating area. The unit is only 5½-in. thisk, 8½-in. high, and 11-in. wide. In the model 200, the core has been placed at the top of the heater. At the bottom of the heater, the 7-in., 8-blade fan slants forward and forces the heat downward. Horizontal vents are across the front and sides. Its frontal area is 8½-in. wide by 6½-in. high. Its depth is 9 in. Noblitt-Sparks industries, Inc., Columbus, Ohio.

P218. Nozzle Test Stand

A fixture for use with the Bacharach nozzle tester provides a self-contained, complete testing device for General Motors Series 71 injectors and unit in-



jectors of the Gray Marine Model 64-HN9 engine. The fixture comprises a stand and a clamping apparatus, complete with a 2000-lb gage, valves and necessary fuel lines.

This unit is suitable for checking spray pattern and nozzle opening or "pop" pressure; determining pressure drop in the injector; checking for leaks at body seal ring, fuel rack, fuel line connections, etc. It may be used for testing other nozzles such as Bosch, Bendix, and Demco makes. Bacharach Industrial Instrument Co., Pittsburgh, Pa.

P219. Paint Sprayer

This new Enginair Spray Set offer is operated from any automobile, truck, or tractor gasoline engine. Two spark

(TURN TO PAGE 86, PLEASE)

New Product Descriptions

Continued from Page 85

plugs are removed and replaced with two pumping units. These operate by the compression stroke of the engine and pump air. They supply up to 150 psi to a small balancing tank from which a 25-ft (or 50-ft.) air hose supplies air to a 1-qt bleeder type internal mix spray gun. This gun is of professional type with three spray nozzles. G. H. Meiser & Co., Chicago, Ill.

P220. Mileage Gage

This testing instrument, known as the Mile-O-Meter, is a vacuum gage with a special dial. It is mounted at the lower left corner of the windshield. The 2⅝-in. dial registers engine performance by means of colored scales. The case is rust-proofed steel, the movement is brass and the crystal is "Plexiglass." Unit is connected to the intake manifold through the windshield wiper hose. Gale-Hall Engineering, Inc., Boston, Mass.

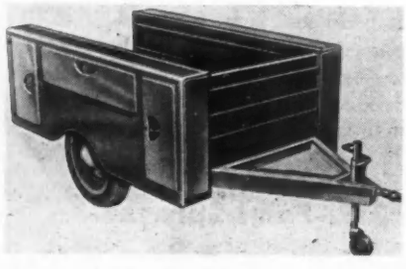
P221. Diesel Fuel Pump

The new DD (double-disk) Diesel fuel pump, lighter in weight and smaller in size, is standard equipment on certain 275 Cummins diesels and optional on others.

Design of the pump enables unit replacement of the fuel pressure pumps, distributor disks, and governor assembly without removal of the pump from the engine. Alignment in the servicing of the pump is minimized since all parts of the bearings in which they rotate are included in the same housing. Cummins Engine Co., Inc., Columbus, Ind.

P222. Light Trailer

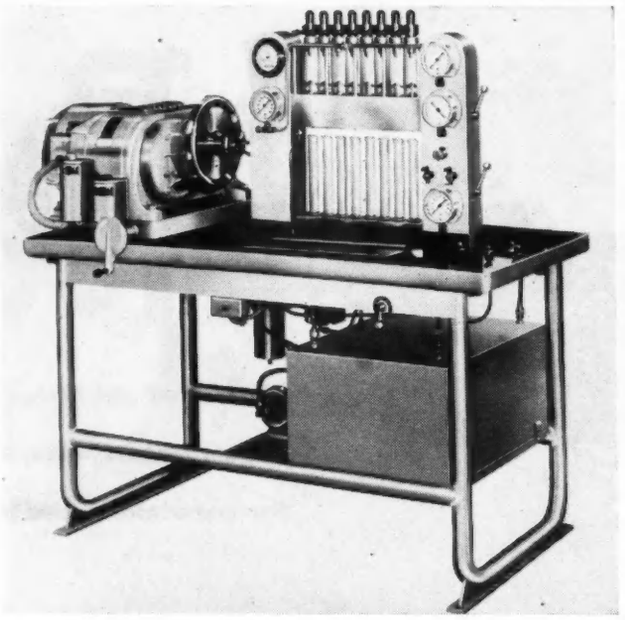
The Carry-All Trailette is a hitch-all, two-wheel, all-purpose trailer that hitches to standard bumpers of any



light truck or passenger car. It is completely equipped with hitch, support jack, wheels, tires, tubes, lights, semi-elliptical springs and a torque-less axle.

All trailettes, in addition to their weatherproof compartments with double positive-sealed rubber weathertight door openings, have winter-proofed cylinder positive-action type locks. The floor of the body is spacious enough to sleep two comfortably. The unit is available in two models, one 91 5/16 in. long, and the other 75 in. long. Morrison Steel Products, Inc., Buffalo, N. Y.

P223. Diesel Fuel Pump Calibrating Stand



The AP 3200 diesel fuel injection pump calibrating stand is a self-contained unit for calibrating, testing and adjusting fuel injection pumps. With adapters, nearly every pump made can be accommodated. Pumps and governors can be set to exact factory specifications.

Variable speed drive, 200 to 2400 rpm, is obtained through a 3-hp heavy-duty reversible, 220-440 volt, 60 cycle, 3-phase, AC electric motor. A tachometer with counter, registers regardless of direction of rotation. Fuel tank capacity is 21.5 gal. A replaceable primary filter between tank and transfer pump and a sealed final stage filter insures clean testing fuel. The unit is mounted on a 5/16-in. steel plate table with a welded base. Automotive Products, Inc., Portland, Ore.

P224. Electrode Holder

An insulated electrode holder, the Lincoln LJ-1, provides a strong electrode grip. Easy thumb pressure releases the electrode. The tip of the jaw end is covered with high temperature resistant, asbestos base compound and a hole is provided in the jaw for holding 18-in. center grip electrodes. The holder is manufactured in the 250-amp size for 1/16- and 3/16-in. electrodes. The Lincoln Electric Co., Cleveland, Ohio.

P225. Throttle Control

This Hydro-Throttle control automatically controls engine speed when operating truck equipment with power take-off. The unit consists of a hydraulic piston connected through linkage to the accelerator lever on the carburetor and derives hydraulic power from the power take-off pump or the equivalent. As pressure from power source increases to lift load, piston is forced into action to increase engine speed. When the load is removed, engine immediately returns to idling. Stratton Equipment Co., Cleveland, Ohio.

P226. Refrigerator Units

Truck refrigerator units of 1- to 7½-ton capacity and 3- to 7½-ton trailer units have the cooling unit driven hydraulically by the propeller shaft while the truck is in motion. When the truck is not in motion, belts can be easily removed from the drive shaft and installed in a Kohler gasoline engine drive. Kold-Truk, Inc., St. Louis, Mo.

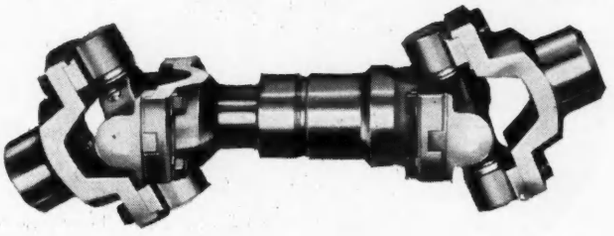
P227. Tire Inflator

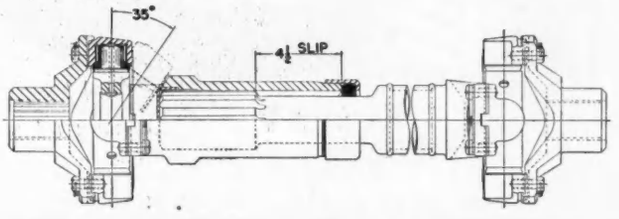
The Nelson automatic tire inflator operates by dialing the desired pressure and pushing chuck on valve stem. Air automatically cuts off at the preset pressure. Made of pressure-cast aluminum alloy, the regulators weighs only 17 oz. Dial is marked in 1-lb. graduations from 15 to 50. Tell-tale indicates when pressure is reached. Kent-Moore Organization, Inc., Detroit, Mich.

(TURN TO PAGE 170, PLEASE)

MECHANICS Are Used on the TOUGH JOBS — Such as Industrial LOADERS

Designers with JOINT problems have learned to rely on MECHANICS. In the industrial loader field, for example — where joints must run all day at constant angles up to 45° — where there are severe shock loads — where wide angles *and* long slip are common — and where dirt and/or moisture are continually present — MECHANICS Roller Bearing UNIVERSAL JOINTS are the accepted solution. Lifetime or once-a-season lubrication is so tightly sealed in that dirt and moisture cannot enter. If you have a "tough" joint problem, it will pay you to make use of MECHANICS engineers' wide experience in solving power transmission problems in hundreds of different fields.





MECHANICS UNIVERSAL JOINT DIVISION

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MECHANICS

Roller Bearing BW

UNIVERSAL JOINTS

For Cars • Trucks • Busses and Industrial Equipment

. . . W. A. HOWE, named chief fuels and lubricants engineer, bus and truck section for Gulf Oil Corp.

. . . GEORGE M. HALLOCK, named assistant manager of the Harrisburg, Pa. motor truck district for the International Harvester Co.

THE features shown above are the advantages *you get* in Anthes reflector flare equipment.

The *entire* Anthes Line of Safety Equipment offers similar advantages for each individual item as illustrated at right. Ask *your* jobber for Anthes! We'll supply you with a catalog and his name on request.

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Anthes THE FIRST LINE OF SAFETY

. . . and proud to serve the safest drivers on the road!

. . . Recent changes in management personnel at Little Giant Products, Inc., Peoria, Ill., H. G. SHARP, new president; WALTER J. BECKER, advanced to chairman of the board; RUSSELL T. WILLIAMS, vice president in charge of operations; and JACK I. DUBOFF, vice president in charge of engineering; ROBERT E. CASEY, new distribution sales manager for Illinois, will head the sales force.

. . . CLARENCE M. KING, former assistant treasurer and assistant secretary, named treasurer and GEORGE H. SCHOETTLY and EDWIN H. CHURCH, new assistant treasurers for the Minnesota Mining & Mfg. Co.

. . . DAVID S. GREER, elevated to the positions of vice president and treasurer of The Midland Steel Products Co.

. . . N. A. CARTER, SR., elected vice president of the Fruehauf Trailer Co. He will also continue as general manager of the Fruehauf - Carter Div.

. . . JAMES "JIM" FLANAGAN, assistant to the president of Maremont Automotive Products, Inc.

. . . JAMES M. MOFFAT, of Scranton, Pa., named assistant to the director, field service department, American Trucking Assn., Inc.

. . . A. F. BOUCHER, district manager in the Detroit area for the Lincoln Electric Co., of Cleveland, Ohio, and I. R. BARTTER, transferred from Grand Rapids to Milwaukee to assume the responsibilities of district manager in that area.

. . . LOYD E. WILLIAMS, named Rocky Mountain regional manager for the Cummins Engine Co., of Columbus, Indiana.

. . . RAY W. SOMMER, appointed manager of lubricating oil sales for the Kendall Refining Co., Bradford, Penna.

. . . WALTER H. BRAMMAN, recently joined the sales force of the Black & Decker Mfg. Co.

. . . ALBERT P. HAYDEN, promoted superintendent of wire rope and tramway engineering and JOHN A. HERR advances to the position of assistant superintendent of this department in the American Steel & Wire Co.

. . . WILLIAM H. LOUGHRAN, appointed general purchasing agent of Ford International.

(TURN TO PAGE 90, PLEASE)

HASTINGS

Sets the Pace

with

CHROME SETS

Hastings heavy duty sets are out-performing all previously known ring combinations for trucks and tractors. One major reason is the Hastings principle of adding chrome *where it is most needed*—on these oil control rings:

This team—Hastings Chrome-Faced Steel-Vent and Chromlube—will greatly increase your expected piston ring life even under the most severe operating conditions.

Under *any* operating conditions, you'll get greater resistance to scuffing, less cylinder wall drag and longer life with Hastings Chrome Sets. Your jobber has them for nearly all truck and tractor models.

HASTINGS MANUFACTURING CO. • HASTINGS, MICHIGAN

Hastings Ltd., Toronto

Introducing . . .

Continued from Page 88

. . . E. V. "Bud" Andrews, manager of the Kansas City, Mo., branch, and Jasper D. Moore, transferred from Kansas City to the branch in Denver, Colo., for the Reo Motors, Inc.

. . . H. O. Holland, elected vice president in charge of sales of all divisions of the Automatic Steel Products, Inc., of Canton, Ohio.

. . . George R. Weber, elected treasurer of Raybestos-Manhattan, Inc., at the annual meeting of the board of directors recently, succeeding W. H. Dunn, who has retired. W. S. Simpson was elected as secretary and W. Ward Kievit as director of the corporation.

. . . Earl H. Lenz, appointed vice president in charge of bus production and engineering at Twin Coach Co., Kent, Ohio, and Fort Erie, Ontario.

. . . Richard E. Isaacson, formerly with the White Motor Co., appointed assistant controller of the Fruehauf Trailer Co.

. . . W. H. Hubbell, appointed as factory sales representative for Federal Motor Truck Co. in the Richmond, Va., region.

. . . Charles R. Ray, elected vice president of Markel Service, Inc., motor transport insurance firm of Richmond, Va.

. . . R. C. Woodhouse, assistant general sales manager, named head of the operations group of the General Motors Truck & Coach Div. of the General Motors Corp. The merchandising group is headed by W. L. Vande Water under the new title of truck merchandising manager and E. T. Herbig, is the appointed manager of the fleet sales dept. with headquarters at the home office.

. . . W. Ray Kern, named sales manager of the Winslow Engineering Co., manufacturers of Winslow filters and elements, in Oakland, Calif.

. . . George V. Holton, chairman of the board, Socony-Vacuum Oil Co., Inc., elected president of the Commerce and Industry Assn. of New York, Inc., for the 1949-50 fiscal year.

. . . George P. Ferguson, who will cover a territory composed of western N. Y. and northern Penna., and William J. Combs, Jacksonville, Fla., assigned to a territory comprising Fla., southern Ga., and southeastern Ala., for the Prest-O-Lite Battery Co., Inc.

. . . Paul W. Campbell, manager of the new branch of Trailmobile Co., Little Rock, Ark.

. . . Maurice Ashley who will serve the states of Me., N. H., Vt., and Mass. for Gumout Div., Pennsylvania Refining Co., Cleveland, Ohio.

. . . Charles L. Freel, formerly manager of the Detroit office, has been made administrative assistant to general sales manager, George E. Tubb of the Lord Mfg. Co. Everett C. Vallin, replaces Mr. Freel in Detroit as Lord's representative in Mich. and northwestern Ohio territory.

. . . Thomas J. Kniff, Jr., representative in the New York office, and Fred Moore as representative in the central district working out of the Detroit office for Kennametal Inc., Latrobe, Pa.

Capacity-Rated Condensers for Your Particular Operating Conditions!

HEAVY DUTY CONSTRUCTION
•
TRIPLE INSULATION
•
CASE & CONNECTOR IMBEDDED IN NEOPRENE
•
OIL FILLED - WATERPROOF CONSTRUCTION THROUGHOUT

For normal driving use HD-25 (.25 mf.) For slow speeds and considerable idling, use HD-30 (.30 mf.) For highway driving, use HD-20 (.20 mf.) ECHLIN Heavy Duty Condensers are capacity rated for longer contact life.

If a crater or pit forms on the negative contact (see illustration A below) use larger capacity Condenser HD-30. If a crater or pit forms on the positive contact (see illustration B below) use smaller capacity Condenser HD-20. If there is no pronounced pit, use HD-25.

(A) Under Capacity (B) Over Capacity

Write for your FREE copy of the new 1950 ECHLIN Truck and Bus Catalog

NAPA Assurance of Quality

ECHLIN Ignition

A PRODUCT OF ECHLIN

CONTACTS
COILS • CONDENSERS
& OTHER AUTOMOTIVE
ELECTRICAL PARTS

ECHLIN MANUFACTURING COMPANY
234 EAST STREET • NEW HAVEN 5, CONN.

HENDRICKSON

USES SHULER AXLES

THERE ARE NO BETTER AXLES, AT ANY PRICE!

SHULER AXLE COMPANY, Inc.
Louisville, Kentucky

Since 1915, Manufacturers of: One-Piece Tubular and Square Trailer Axles, Front Axles, Machinery Trailer Axles, Machinery Front Axles, Front-Steer Trailing Axles, Heavy-Duty Brakes (Mechanical, Vacuum and Air), House Trailer Axles, Miscellaneous Forgings for Heavy-Duty Trucks and Trailers.

DETROIT OFFICE
18954 James Couzens Highway

CHICAGO OFFICE
615 Davis St., Evanston

DALLAS OFFICE
3402 McFarlin Blvd.

EXPORT DIVISION
38 Pearl St., New York

WEST COAST WAREHOUSE
1280 Forty-Fifth St., Oakland

SOUTHWEST WAREHOUSE
301 N. W. 28th St., Fort Worth

NORTHWEST WAREHOUSE
1238 N. W. Glison St., Portland

Shop Leaves Nothing to "Desire"

Continued from Page 53

respective sections using the monorails for the heavy items and their rebuilding begins.

Any movement of heavy items such as the cylinder block to the Heald cylinder grinder or hydraulic press is accomplished by the monorail or the jib cranes and back to the rebuild stand.

The main engine parts as crankshaft, heads, connecting rods, etc., are kept together while the other units are turned into the General Stock Room for use on any power unit as the overhaul is completed.

As actual work on the assembly begins, the two jib cranes in the main shop take over serving all of the area occupied by the No. 1 engine table, the cylinder grinder, the bearing borer, the cylinder head grinder, the drill press and the arbor press.

When ready for reassembly, the block will be moved (via the monorail) to tables further up the line. Here rebuilt parts and accessories will be fed to it either direct from the various subdepartments or from the huge stock room located just beyond the far end of the shop.

All-In-One Treatment

THESE SUB-DEPARTMENTS, all located toward the far end of the shop, include complete rebuilding facilities for carburetors, fuel pumps, air compressors, air brake parts, starters, generators, distributors, etc. Each of these parts is rebuilt to standard specifications and stocked, there usually being no attempt to return particular accessory groups to any particular block assembly. There are also separate sections for clutch transmission and rear end assemblies.

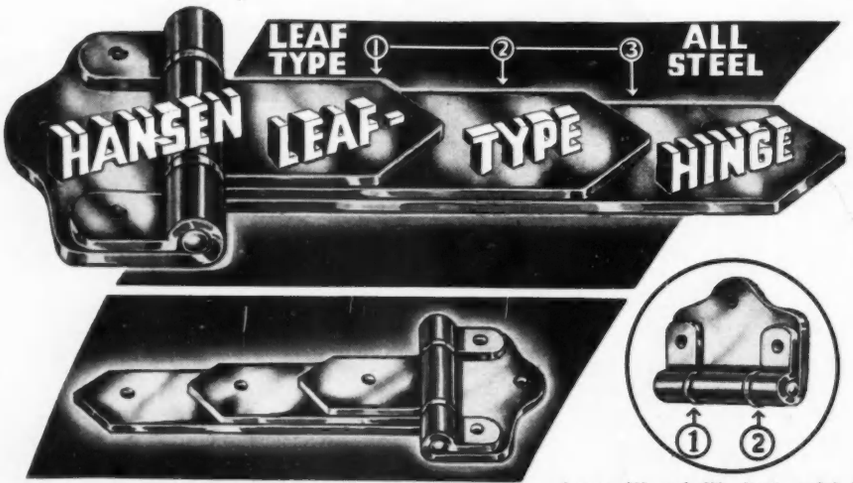
All of these sections, however, are located in the same big room, partly as a means of correlating all machine shop activity under a single superintendent, and partly to allow ready access to the large machine tool equipment such as lathes, drill press, arbor press, etc., which may be shared by all.

When the engine is completely rebuilt, the monorail carries it to the engine dynamometer. Here the engine is placed on the dynamomter and connected up. The dynamometer, running as an electric motor, drives the engine until the friction horsepower drops to the minimum figure. This usually requires about four hours. The engine is then started and, running under its own power, drives the dynamometer. Various loads are applied, and the engine runs for approximately 16 hours.

The engine is then removed, painted,

(TURN TO PAGE 96, PLEASE)

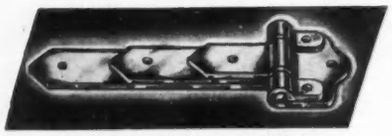
Unbreakable!



No. 19 Leaf-Type Hinge. 3-ply, 20" strap, 2¾" wide. All-steel. Plain, cadmium or chromium. Wt. 7 lbs.

Arrows (1) and (2), inset, point to hardened steel thrust bearings. These add strength; resist wear.

No. 16 Leaf-Type Hinge. 3-ply. 16" strap. 2¾" wide. All-steel. Plain, cadmium or chromium. Wt. 5¾ lbs.



No. 12 Leaf-Type Hinge, 3-ply. 12" strap, 2¼" wide. All-steel. Plain, cadmium or chromium. Wt. 4 lbs.

No. 6 Leaf-Type Hinge. 8" strap. 1¾" wide. All-steel. Plain, cadmium or chromium. Wt. 2½ lbs.

HANSEN Leaf-Type Hinges are made of hard-rolled steel. Strong, durable, attractive, they support the heaviest commercial body doors—and give lasting service.

Hardened Steel Thrust Bearings and Bolt

To give added strength and durability, Hansen Leaf-Type Hinges are fitted with hardened steel thrust bearings. (See inset above.) These bearings provide solidly supported doors and insure easier opening and closing.

Leaf-Type All-Steel Insures Greater Strength

Greater strength is provided by leaf-type construction, which gives greatest strength at base where most needed. Arrows at top point to unique leaf-type design. Leaves are spot-welded.

Hinges Available in Various Types

Hansen Leaf-Type All-Steel Hinges are available in 8", 12", 16", and 20" lengths—chromium, cadmium or plain finish. Brass Hinges, leaf-type, can be supplied in 6", 8" and 12" lengths. Also, round-corner, square-corner and continuous types.

HANSEN HARDWARE for Commercial Bodies

WRITE FOR CATALOG WITH COMPLETE INFORMATION.

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.

"Chivalry is back. 32 gentlemen offered me their seats on the bus."

for most trailer axles

Dayton Forged Aluminum Spoke Wheels

Forged by Alcoa! Machined and Sold by Dayton!

Here's wheel news that can mean bigger payloads for you—plus worthwhile savings in operating and maintenance costs!

The Dayton Steel Foundry Company, Dayton, Ohio, has just announced a full line of light, strong aluminum spoke wheels, made from Alcoa Forgings. Both 20″ and 22″ sizes are available to fit the following axles: Timken 17127 and 17129; Standard Forge A17S; Shuler T18.

Forged for maximum strength, these new aluminum wheels weigh only half as much as comparable steel wheels. Add the pounds you save to payload! Less unsprung weight means less road shock—less dead weight to haul around. Your new aluminum wheels conduct heat rapidly, keep tires cooler. They're machined to run true. Never need painting.

Ask your Dayton representative about the economy of weight saving with forged aluminum spoke wheels. Or call your nearby Alcoa sales office. ALUMINUM COMPANY OF AMERICA, 1870G Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

Nothing to "Desire"

Continued from Page 92

picked up by the fork lift truck and stored on specially built racks which stack even the big "pancake" three tiers high.

And There's More

THE OVERHAUL department occupies about 1/6 of the total floor space at the Dupre Street garage, excluding office space and a separate garage across the street devoted exclusively to trolley-bus maintenance. The other 5/6 of the garage area parallels the overhaul department in efficiency but is of more conventional design. There is a major inspection area using four pits and three twin post lifts. Most of these, incidentally, are also serviced by a branch line monorail connecting with the shop monorail at the dynamometer end. Behind the inspection area is an unobstructed general maintenance shop equipped with four additional twin-post lifts and a chassis dynamometer.

Then there are three "fast lines," equipped with two double length pits and two more twin post hoists, for the more frequent inspections and for lubrications. All types of lubricants, incidentally, are piped to these pits from a central grease room. At the far end of each of these lanes is located a fuel island. Beyond is a mechanical brush washer and two more lanes used for tire repair and inspections. These are adjacent to two separate tire rooms; one for truck tires, the other for bus tires.

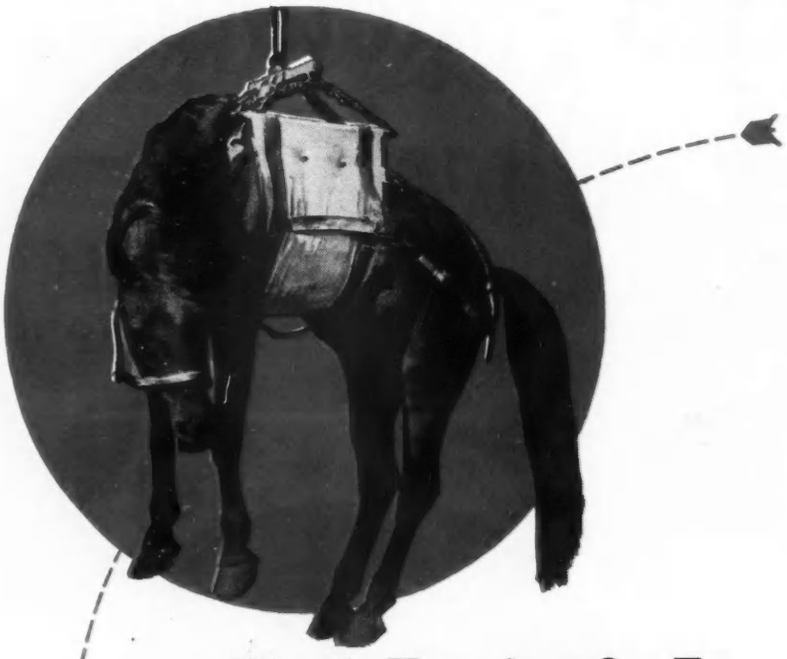
Steam Room

ONE FINAL feature is a small, separate corrugated iron building used for steam cleaning the underbody of buses prior to major inspections. As innocuous as any such shanty, it has an unusual gimmick. It gets the buses well up in the air without *any* obstruction of *any* component. The trick lies in a hoisting mechanism coupled to four separate cables which are attached to four telescoping steel tubes. At the lower end of each of these tubes are ½ round steel saddles with heavy oak facings. These saddles fit under the wheel housing just over the tires. Steel turnbuckle rods running through the coach windows tie the lifting tubes in pairs so that they cannot swing out of the wheel housing. Single motors on each pair of lifting tubes raise the front and rear ends of the bus in unison, and safety lock pins are run through the tubes when the desired height is reached. This results in a clear space under the bus for the men to carry out the chassis steam cleaning operation.

The men of the New Orleans Public Service responsible for this shop are Edwin Dahmer, foreman of the overhaul room, and Victor Fetter, general foreman of the bus garage. A. E. Labarre is superintendent of equipment.

END

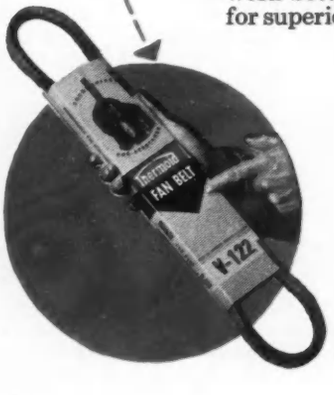
Please resume your reading on P. 54.



Worth Hanging On To

Anything you can get hold of that helps cut maintenance and operating costs these days is worth hanging on to. Thermoid *Pre-Stretched* Fan Belts, for example. Pre-stretching prevents slipping—checks fan belt failure before it starts. To show how effectively the Thermodized Pre-Stretching Process assures perfect fit and tension at all times, the weight of a 1500-pound horse was suspended from a Thermoid Pre-Stretched Fan Belt. The belt was then returned to service in the car from which it had been taken *and it worked perfectly at the original adjustment.* That's why Thermoid Fan Belts are a "horse of a different color"—they last longer, work better, cost less in the long run. Specify *Thermoid* for superior performance under all operating conditions.

One Line—The Top Quality Line



Thermoid

Brake Linings • Fan Belts • Radiator Hose • Hydraulic Brake Parts and Fluid • Car Mats • Clutch Facings • Thermoid Precision Process Equipment

Thermoid Company • Trenton, N. J.

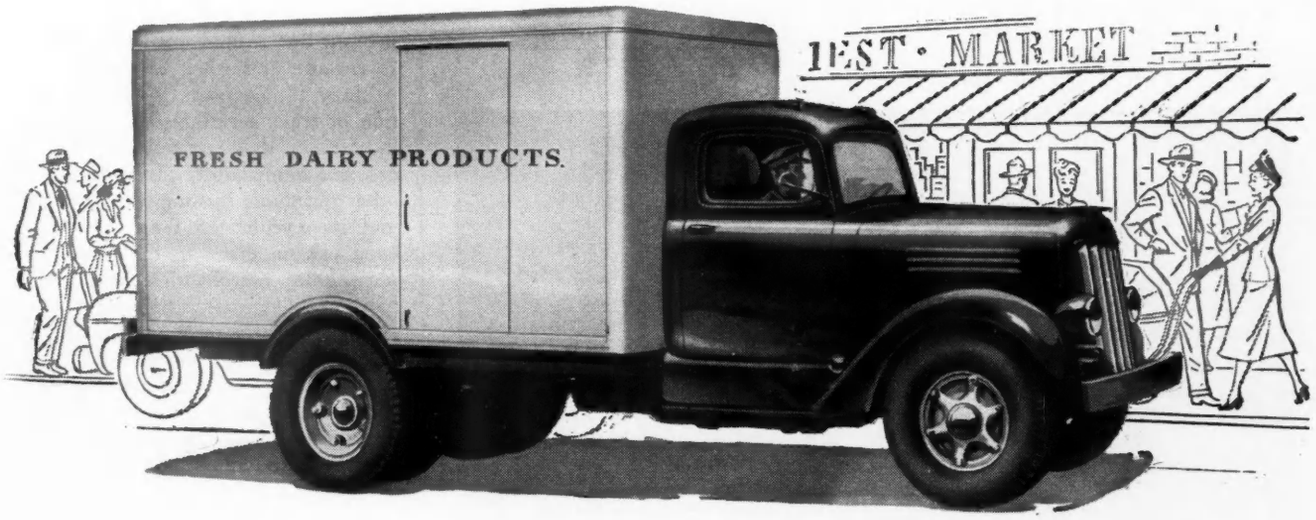
Bell Wins Award

The National Safety Council has announced that the Bell Syndicate, Inc., headed by John N. Wheeler, is a recipient of the Council's 1949 Public Interest Award.

The award was made on the basis of the firm's distribution, in syndicated form, of the booklet "Motor Manners," written by Emily Post and published on a non-profit basis by the National Highway Users Conference. More than a million copies of the booklet have been distributed by N.H.U.C. since its first printing last summer. The Bell syndication brought it to the attention of millions more.

TURN MORE DEAD WEIGHT INTO PAYING FREIGHT WITH . . .

MAGNESIUM



A Magnesium Body added one ton to the payload of this truck

A dairy in Ohio replaced a steel van-type body with one made of magnesium. They found that this change cut 2000 lb. off the weight of the truck. As a result, one extra ton could be added to the vehicle's payload without exceeding gross weight restrictions. Operating profits went up because fewer trips were required to transport the same amount of milk.

This particular example furnished added proof of the strength and durability of magnesium truck bodies. The firm reported only minimum maintenance was required while hauling heavy loads over rough country roads.

A magnesium truck body is the lightest body you can buy and years of service have proved its ability to "take it". Cost records from many firms have shown that it pays to buy magnesium lightness when you buy a truck body.

The Lightest Truck Bodies Are Made of Magnesium

For more information about magnesium truck bodies, or the name of a custom body builder in your vicinity, call the nearest Dow sales office or write direct.

Magnesium Division, Dept. MG-94

THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Atlanta
Cleveland • Detroit • Chicago • St. Louis • Houston
San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

Teletype Expedites Cargo Movement

Continued from Page 63

name for each unit. A carbon copy is made of this report at each terminal for its own records, and the original dispatches from other terminals filed for the same purpose.

In the event of a breakdown of equipment during the night or cancellation of the trip for any reason, each morning, starting at 8:30, a broadcast is made to other terminals expecting the arrival of equipment. If these terminals have made arrangements with shippers to pick up a load, this early information will allow them to make other arrangements to satisfy customers having the pick-ups. The terminal having the pick-up promised can very soon locate equipment at some other terminal and have it sent at once for the pick-up. The saving of time in getting the proper equipment at the spot at the right time saves much inconvenience and holds on to business.

Our late afternoon and early morning broadcasts, set at a definite time, take precedence over everything else—nothing is allowed to interfere with these dispatches.

Teletype Helps Shippers

OUR teletype system is a help to shippers in many ways. One of these is in looking for anticipated shipments. For instance, if a customer in Springfield, Ill., is looking for a shipment from New York routed to Chicago by one carrier and from there to Springfield by our system, and he thinks that it is overdue, we can trace this shipment by Springfield asking our Chicago terminal to check with the connecting line to find out if the shipment is enroute and when to expect it.

Many things come up in the operation of truck terminals of more or less importance that one terminal may find out and immediately give notice to the other terminals in time to save expense and inconvenience. We have straightened out an error in the handling of perishable merchandise that would have been expensive had we not been notified, as the merchandise would have spoiled and we would have had to pay for it. As it was, the information received from another terminal enabled us to take measures immediately to protect the merchandise and save.

Other Benefits

THE teletype has been used several times to quickly locate and have shipped hard to get repair parts for trucks that have broken down. This is very important, as formerly trucks were sometimes held up for some time waiting for parts. By the use of the teletype these can now be located in Chicago or St. Louis by notifying the terminals in those cities—only one call is now used where formerly it might take several.

Another advantage of our teletype system is that it furnishes an adequate check on drivers and, to our payroll department, for lost time reported in deliveries and pick-ups. For instance, a few days ago, in studying a report, we found a driver reported 12½ hours for a trip that normally takes only 10 hours. We checked to find the reason and it developed that the terminal where he received his load was 2½ hours late in getting the billing ready, so we had a check on both the driver and the billing department. In this case, several employes of the billing department were absent, throwing the work on too few to do it properly.

The foregoing are only a few of the advantages of our teletype system. As time goes on, undoubtedly many more new ones will develop.

END

Please resume your reading on P. 64.

Real stoppers, these!

Big and bright, they're perfect for emergency vehicles . . . fire apparatus, police cars, snowplows. Like all Arrow *safety after dark* equipment, they're dependable . . . built for long, trouble-free performance.

Reflecting surfaces are plated and highly polished. Rims and bases are finished with baked-on enamel over bonderized steel. Effective lens diameter is 6⅛"; lettering is ⅜" x 2". 21 candlepower bulbs furnished with all models. Lenses are available in red, amber and blue, with or without the word STOP.

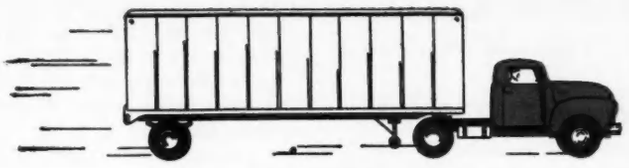
See your jobber salesman today about Arrow Emergency Lights and Arrow's complete line of lighting equipment . . . headlights, marker lights, directional signals, reflectors, mirrors and flares.

safety after dark

GET IT FROM YOUR JOBBER

ARROW SAFETY DEVICE CO.
MOUNT HOLLY, NEW JERSEY

ARROW

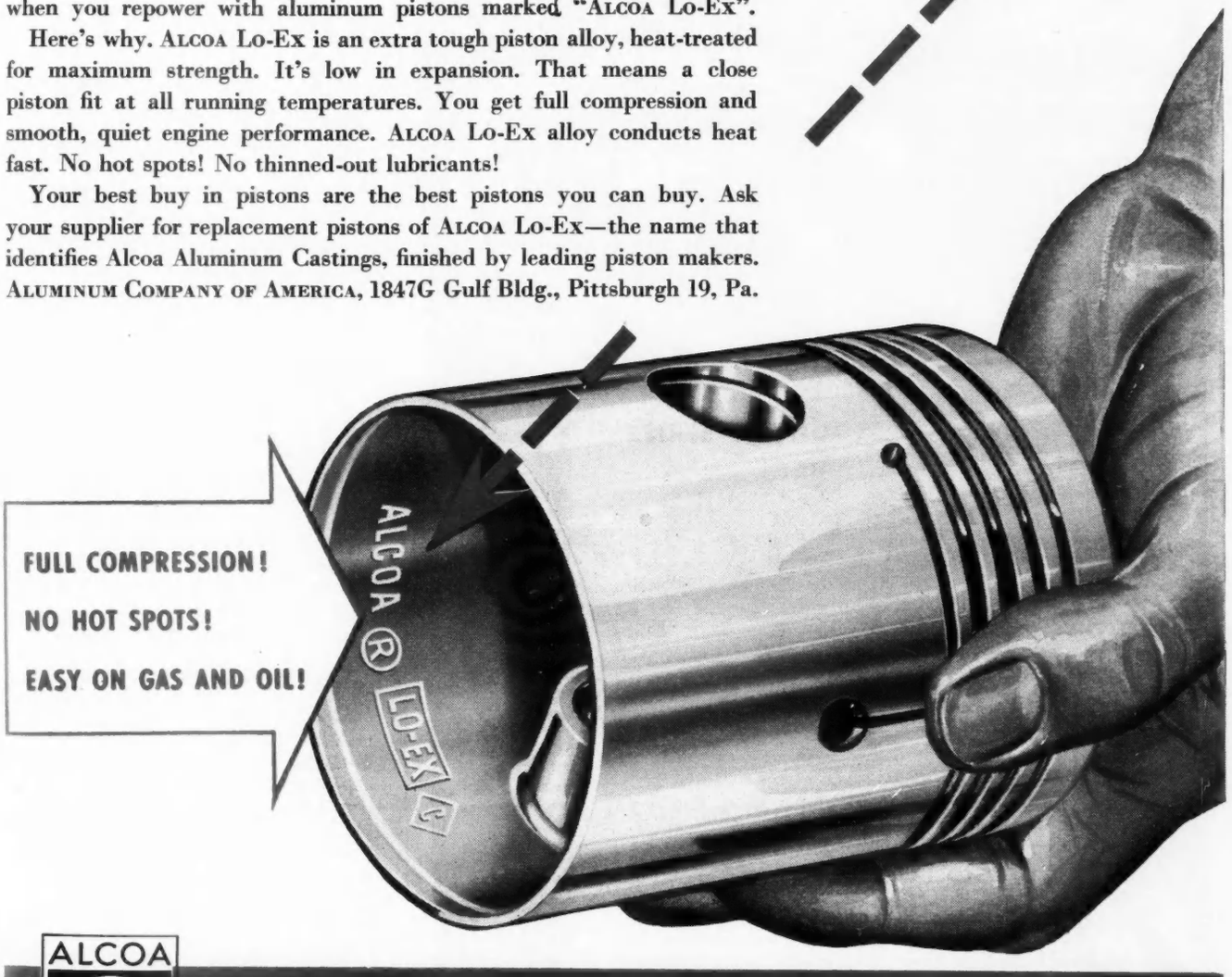


Get more haul per overhaul with pistons of ALCOA LO-EX

You'll get your money's worth of mileage out of every motor overhaul when you repower with aluminum pistons marked "ALCOA LO-EX".

Here's why. ALCOA LO-EX is an extra tough piston alloy, heat-treated for maximum strength. It's low in expansion. That means a close piston fit at all running temperatures. You get full compression and smooth, quiet engine performance. ALCOA LO-EX alloy conducts heat fast. No hot spots! No thinned-out lubricants!

Your best buy in pistons are the best pistons you can buy. Ask your supplier for replacement pistons of ALCOA LO-EX—the name that identifies Alcoa Aluminum Castings, finished by leading piston makers. ALUMINUM COMPANY OF AMERICA, 1847G Gulf Bldg., Pittsburgh 19, Pa.



ALCOA ALUMINUM

Aluminum Pistons of ALCOA LO·EX

Detroit Dispatch

Continued from Page 31

GM Announces "110" Diesel

The long awaited announcement of the "110" Diesel engine has been made by Detroit Diesel Div., General Motors Corp. Although originally planned as a lightweight aluminum structure engine, the production version is of cast iron for major elements. Moreover, it is being groomed specifically for railcar use, for large earth moving vehicles, and general industrial, marine and oilfield equipment.

The "110" model is of 2-cycle type, same as the well-known "71" series engines, has a bore and stroke of 5 x 5.6 in., displacement of 660 cu. in. and has a max. rated output of 275 hp at 1800 rpm. Normal rated bhp with standard equipment is 254 at 1800 rpm. Maximum torque is 834 lb hp at 1200 rpm.

The engine is equipped with a new gear driven centrifugal blower mounted at the rear above the flywheel. Cylinder sleeves are of dry type.

Price Quandary Prevails

Don't look for any near-term cuts in truck prices. There has been a lot of talk about automobile and truck prices not going up again and we don't like to be accused of scare talk, but if the present inflationary spiral continues it would not be too surprising if prices even advance a bit this year. Materials such as rubber, lead, zinc, copper and others are again on the up grade and the pensions and insurance benefits, plus wage increases in some instances, granted in union contracts among manufacturers and suppliers have really put the squeeze on truck builders whose profits were nothing to brag about before the price surge started. Volume and increased efficiency may be able to offset increased costs enough to prevent a price increase on products, but there is no assurance that they will. Intense competition is another pressure working against the price increase, but it is too early to tell whether or not it will forestall one indefinitely. One large truck sales manager says that the truck industry is about the only one doing a large volume of business but making very little money at it. He says competition is forcing many unsound deals such as one involving sale of several units on the basis of nothing down, five years on the balance, plus two years free service.

NEAPCO
POWER TAKE-OFF
Universal Joints
Built for long service.
High capacity.
Lightweight.
Complete range of bore sizes.
1500-1600 series standard length.
NEAPCO 1500-1600 SERIES TYPES
STANDARD LENGTH (shown above): 5" long, needle roller and plain bushing types.
8" SLIP LENGTH: needle roller and plain bushing types. This joint and the standard length satisfy most all needs for single joints and drive shaft assemblies.
UNWELDED CENTER ASSEMBLY: employs splined slip stub and 1¼" O.D. tubing. Can be cut to size. End yokes supplied separately.
TELESCOPING DRIVE SHAFTS: square and rectangular shaft and tubing. Clamp type and quick disconnect yokes to fit all standard tractor PTO shafts.
Selected for original installation by leading manufacturers of dump bodies, lime spreaders, and agricultural implements.
Ask your Automotive Jobber for Neapco PTO's.
NEAPCO PRODUCTS INC., POTTSTOWN, PA.

Revised GMC Sales Policy

GMC is revising its fleet sales policy as part of its general overhauling of the entire organization under the new management. Sales to fleets now will be made through the regular retail distribution channels, dealers as well as factory branches, in all but two of the large major cities where the size of individual deals is too great for dealers to handle financially.

All-Time Records

A Reo test driver, L. B. "Tige" Royce, has hung up a remarkable safety record covering 43 years of driving for the company. In that period he has never had a chargeable accident in the 2,150,000 miles he has driven testing cars, trucks, buses, and military vehicles. He has averaged 50,000 miles per year since he joined Reo in 1906.

White Has Packard Engine

White Motor Co. has made a deal with Packard to use the Packard 245 cu. in. 6-cylinder engine in one of its truck models. The engine is the same one used in the Packard taxicab and develops 100 horsepower at 3200 rpm. White will use it in one model only, the 3014, which is a 1½ ton C-O-E with tilting cab. Both White and Packard dealers will handle repair parts for the engine.

K-F in Canada

Reo has concluded an agreement with Kaiser-Frazer of Canada Limited for assembly of Kaiser cars at Reo's Canadian plant near Toronto. Tooling costs for production of ten cars a day will be borne by K-F with Reo supplying the labor and plant facilities. Production will start late in July.

END

(Please resume your reading on P. 37)

Carburetor Maintenance

Continued from Page 59

one of our gasoline suppliers to arrange for a carburetion specialist to come to our property, analyze our conditions and current procedures, and help us increase our overall fuel economy. The oil company, in turn, obtained the services of just such a man from the Ethyl Corp., and he has been helping us since that time.

The first step taken by the carburetor expert was to familiarize himself with the way our buses are operated throughout our system. His next step was to observe in detail the rebuilding of carburetors in our shop. His third step was to work with our garage tune-up personnel.

To visualize the problem confronting us, we need only to keep in mind the typical operation curve of a carburetor; which starts from a relatively rich mixture at idle, drops to a lean one at intermediate throttle openings, and becomes rich again as we approach full throttle.

Proper Idling Important

UNFORTUNATELY, in city service, such as ours, there are only two regularly used positions of the throttle —one is the idling position and the other is wide open or nearly so. The importance of the idling circuit cannot be minimized. Not only do our buses idle or decelerate in the idling position a large portion of the operating time, but at any throttle opening up to governor setting, the idling circuit affects the overall carburetion.

It may seem fundamental for me to say that the proper jets, as recommended by the manufacturer, are necessary for proper idling adjustment. But, we have found, as I am sure you have, that some jets as received from carburetor manufacturers cannot be counted on to provide the flow indicated by the number on the jet.

We found, and this also is fundamental, that the air bleeds in the idle circuit must be given more attention to insure their cleanliness. It is occasionally possible to unscrew the idling adjustment completely from the carburetor, under aggravated conditions, and still not obtain a sufficiently lean mixture.

Build Float Level Tester

BECAUSE of the importance of a proper float level when striving for economy in the idle circuit, our carburetor expert suggested, and helped build, a float level tester for our carburetor shop, by means of which the float level and needle valve are checked under actual fuel pump pressure. This simple but effective device has reduced materially the number of turn-backs on carburetors sent out to the garages. For those of you who may not already have such an arrangement, I have had a sketch prepared that you may find helpful. (See Page 106.)

Back to idling, I might mention that because of the balanced carburetors which are prevalent in the bus field, we have found it is necessary to be sure that parting gaskets are free from leaks; which will, of course, result in richer mixtures under some conditions.

Setting Idling Adjustment

IT APPEARS that the best way to set the idling circuit adjustment is with a vacuum gage and a tachometer; taking care always to drop back from the lean side. An occasional check on settings with an exhause gas analyzer will insure that the mechanic has acquired the proper "feel" or technique in making his adjustments.

Of course, it is desirable to make adjustments to the idling circuit while the bus is sitting on the level. But we found that, in the case of pancake en-

(TURN TO PAGE 106, PLEASE)

Factory Installed

In These Trucks:
International • GMC
Diamond T • Peterbuilt • Dart
Federal • Walter • Oshkosh • Duplex
Ward La France • Coleman • Reo
Hendrickson • Sterling
Available • FWD

At "factory installed" prices you get this Bostrom Hydraulic Seat, the ultimate in truck seating, at lowest cost.

BOSTROM

HYDRAULIC shock absorber and suspension mechanism of the Bostrom seat soak up jolts and jars. Steel frame and bonded rubber pad last the life of the truck. Mechanism moves in rubber—requires no oiling. Fore and aft adjuster accommodates all drivers. Seat coverings are replaced in 10 minutes—eliminating upholstery jobs.

For truck part numbers consult your truck dealer or write:

BOSTROM MFG. CO.

Milwaukee 4, Wisconsin

Costs a little more at the start... costs a lot less in the long run.

Carburetor Maintenance

Continued from Page 105

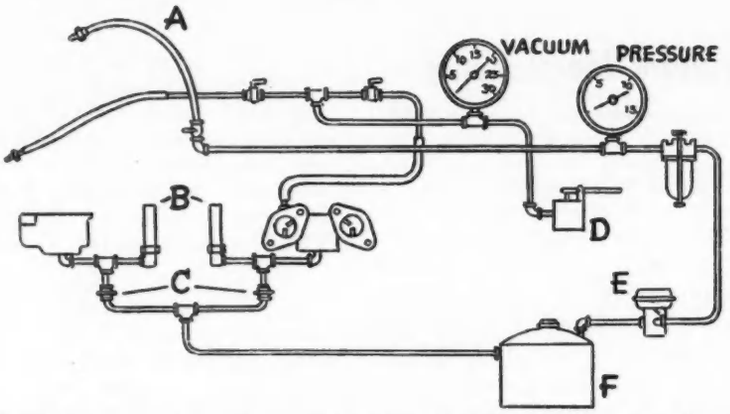
gines, it was not uncommon for our mechanics to make such adjustment while the bus was on a two-post hoist.

Some carburetors are unnecessarily sensitive to the setting of the idling adjustment. On one of the types of our buses, we have found that a difference of one serration on the idling screw may vary the air-to-fuel ratio by as much as one complete number. Such sensitiveness means that failure to relieve any wind-up tension on the idle screw loading spring may cause a change in adjustment during operation of the coach.

The power circuit is equally important. Since our buses don't have the power-to-weight ratio of a passenger car, and, since they have to compete in traffic with such vehicles, they are operated much of the time, as I have mentioned, in wide open throttle or very nearly so.

Calibration of the accelerating pump with a vacuum tester arranged in conjunction with the float level tester, which I have described earlier, offers some opportunity for economy. We also have found that it is necessary to assure ourselves that the power jet is of the proper size, regardless of its mark-

(TURN TO PAGE 108, PLEASE)



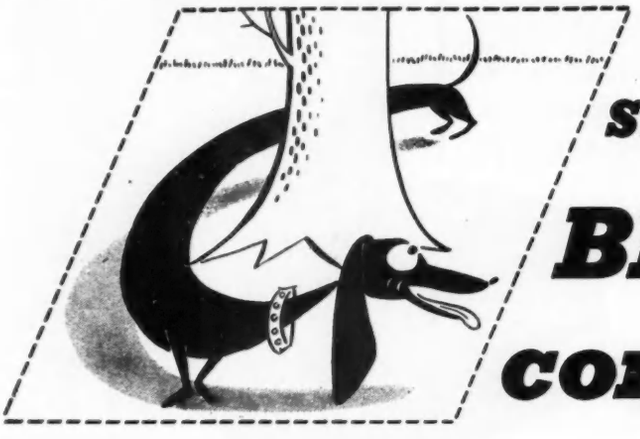
This is a diagram of the carburetor float level tester, referred to by the author. A is flexible gas line. B are sight gages calibrated for proper float level. C are drain cocks. D is vacuum pump. E is electric fuel pump. F is gasoline tank. Instructions for use are as follows:

PROCEDURE FOR SETTING CARBURETOR FLOAT LEVELS

1. Check float level with template to get approximate setting.
2. Mount top on dummy carburetor, connect gas line.
3. Shut off drain.
4. Turn on gas until needle valve cuts off flow of gas.
5. Note pressure build up when needle valve is closed. Use gage to check for needle valve leakage.
6. Read meniscus on sight gage.
7. If meniscus is high, lower float level.
8. If meniscus is low, raise float level.
9. This method is a good check for action of needle valve and seat. Also checks template method of setting float. Experience with unit indicates temp'ate checking is acceptable 90 per cent of the time.

TO CHECK ACCELERATING PUMP (with head on and carburetor full)

1. Connect vacuum line.
2. Operate vacuum pump.
3. As vacuum is released, note action of accelerator pump by evidence of gas discharged into venturi chamber.
4. Make certain there is slight discharge a six in-seven in vacuum indicating that accelerator pump has allowed economizer jet to close.



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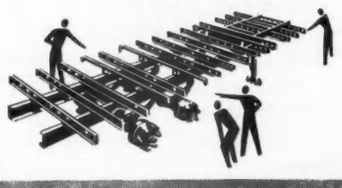

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ERIE MALLEABLE IRON COMPANY

Automotive Wheel Division

ERIE • PA.

350

Carburetor Maintenance

Continued from Page 106

ing, and that there is no elongation of main discharge tubes.

Fuel Economies Achieved

LET'S take a look not at what the indications are as far as results are concerned. I must repeat that these are only indications, but their consistency cannot be overlooked. At a garage where we have concentrated on the carburetion we find that during the month of April, twenty buses in one group averaged 2.85 mpg, as compared to the 120 buses of that group as a whole which averaged 2.44 mpg—an increase of .41 mpg.

Similarly, ten buses of another group of 100 averaged 2.50 mpg, compared to 2.26 for that group—an increase of .24 mpg.

Also, a group of 25 buses of still another group of 105 averaged 2.70 mpg, as compared to 2.53 for that group—an increase of .17 mpg.

Altering Specifications

SO FAR my theme has been one of getting the most economy possible from carburetors maintained at manufacturers specifications. Since no two operations are the same, it is certainly conceivable to us that certain variations from the manufacturers specifications, made with thorough understanding and expert advice, may offer further economies.

At present, we have a relatively small number of buses under test with this in mind. While the results are far from conclusive, I can say that we have sevveral 45-passenger buses of different makes in this test that are exceeding 3 mpg, as compared to about 2.5 on the average, before this work was begun.

In a previous effort to obtain economy, we ran a test on several White Model 798TC buses to determine the advantages of using high compression heads and economy jets in the carburetor. For this experiment the compression was raised from 5.65:1 to 6.5:1, a very substantial increase. We found it possible to obtain practically the same performance from the bus as before, with a very definite increase in gasoline economy—approximately .25 mpg.

We found, however, that in order to obtain performance equal to the other buses of that type, the engines had to be very carefully tuned, and small changes in adjustments that occurred during operation affected the performance of the bus to the extent that the operators became dissatisfied. We also had difficulty in keep head gaskets in

(TURN TO PAGE 110, PLEASE)

New WAX PROTECTION *New* WAX BEAUTY

NOW AT FAR LESS COST!

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NO BUFFING—
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Above: Spray waxing one of the trucks of the famous, spic-and-span Sidney Wanzer & Sons dairy fleet in Chicago.

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Carburetor Maintenance

Continued from Page 108

these engines. In spite of this, we feel that it is possible that some advantages lie in this approach to stretching our gallon of gasoline.

On a Model C41 Mack demonstrator, which we had in service last summer, we were able to increase the gasoline mileage from 2.43 to 3.17 by dropping the shift point from 25 mph, as received, to 20 mph optimum adjustment.

This bus was operated in city service where the speed limit was 25 mph. The reason for this wide variation in economy becomes obvious after riding the bus in passenger service and observing the operating techniques the driver develops for each shift point.

Other Factors

THERE are, of course, factors affecting carburetion analysis other than carburetors themselves. No doubt many of you have noticed, as we have, that the installation of a new set of spark plugs may cause the engine to idle less smoothly than before. When this occurs the average mechanic's first impulse, not knowing exactly what the problem is, is to reach for his carburetor idling screw and richen it somewhat in an attempt to smooth out his idling

The rough idling itself is a result of the electrode shape of the new plug and is a condition which cures itself in a relatively few miles without any attention. But since this phenomena occurs, it might be well to be sure that all carburetor adjustments are made prior to the servicing of the spark plugs, and that no readjustment of the carburetor is made afterwards, regardless of a noticeable roughness.

Another complication which may arise shows up as a gradually reducing gasoline mileage after the engine has been carefully tuned and new distributor points installed. This may be directly attributed to the initial wearing down or burnishing of the rubbing blocks on the distributor points, and, although these are burnished at the factory, they often require additional running-in before they will hold their dimension over a reasonable length of time. In fact, we have experienced as much as a 15 deg change in timing in the first week of operation of a new set of points.

Ignition systems in general influence apparent carburetion. Many an innocent carburetor has been exchanged, on our property, when some quirk in the ignition system was responsible.

The point I wish to drive home is that making maintenance personnel "carburetor conscious," preferably under the eagle eye of a real carburetor specialist, may well place the rosy estimates of return, in our respective laps.

Improved Driver Techniques

IT WOULD not be fitting for me to discuss only the mechanical economy. We have another influence on our fuel economy that can, and often does, wipe out the savings that we work so hard to obtain. I am talking about the actual driving of the buses by our operators.

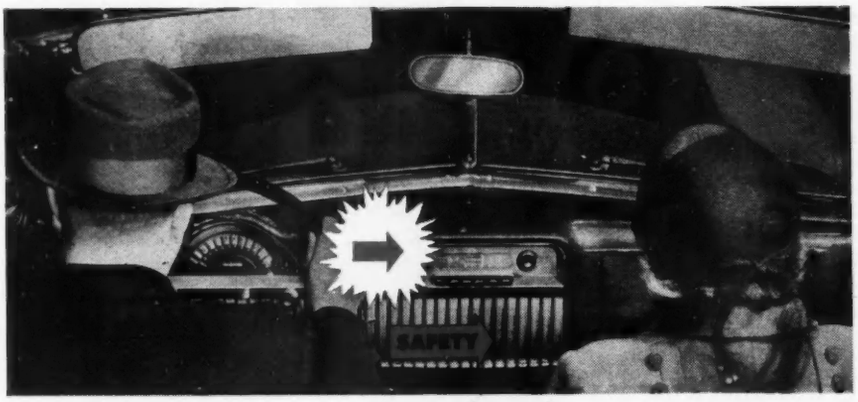
An examination of the driving records of the individual operators in any one division will show the wide variation in the amount of fuel each operator requires to do the same job. We recognize in the industry, I am sure, the need for training or retraining of operators in the art of driving with economy of operation in mind.

END

Please resume your reading on P. 60

JOBSERVATION

Chair warmers never set the world on fire



Every flash of the Pilot Light Spells—

SAFETY

SAFETY

SAFETY

SAFETY

A perfectly functioning direction signal on an automobile is a tremendous safety factor, both to drivers and pedestrians. But, let a light burn out, or other failure occur unknown to the driver, and safety instantly becomes a hazard.

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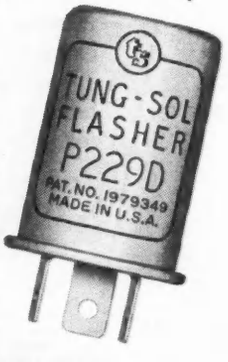
Nearly 10,000,000 TUNG-SOL Flashers have been bought since 1939. The TUNG-SOL Flasher is now standard or optional equipment on virtually every American made automobile. It normally lasts for the life of the vehicle, consumes little current and requires no maintenance. *Write for more information.* TUNG-SOL LAMP WORKS INC., Newark 4, N. J. *Sales Offices:* Atlanta, Chicago, Dallas, Denver, Detroit, Los Angeles, Newark.



TUNG-SOL SIGNAL FLASHERS

ALSO AUTO LAMPS, ALL-GLASS SEALED BEAM LAMPS AND ELECTRON TUBES

Model aluminum truck body, built to ⅓ scale by Alcoa development engineers, using the new Alcoa extruded truck body shapes.

This "half-pint" points the way to LOWER COSTS for aluminum bodies

As more and more economy-minded fleet operators have switched to aluminum truck bodies, there's been a growing need for a complete line of "universal" extruded truck body shapes. Now... *Alcoa has it!*

The "half-pint" model, shown above, was built to ⅓ scale by Alcoa engineers to demonstrate the possibilities of these new extruded aluminum shapes. They're applicable to all principal truck body types—smooth panel, exposed post and skirted bodies. With proper use, sections permit either fabrication by sub-assembly or unit construction on the truck chassis.

Alcoa *does not* make bodies commercially. But your nearest Alcoa sales office will gladly supply full information to help you save time and money with the new Alcoa truck body shapes. Or write ALUMINUM COMPANY OF AMERICA, 1860G Gulf Building, Pittsburgh 19, Pennsylvania.

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Murder—Truck Springs

Continued from Page 64

springs must be very carefully measured when installing. If they are installed improperly—the short end where the long end is to be or vice-versa—the unit will be out of line and will very seriously affect the steering geometry, brakes and cause tire wear. We might add it is rather dangerous operating a unit under these conditions. Our suggestion is that the mechanic be instructed to measure these springs when taking them off the vehicle and measure the replacement spring when installing.

Broken Rebound Clips

REBOUND clips are installed on a spring for a very definite reason. They keep the springs in alignment and can keep them from fanning out, which condition is dangerous, can ruin tires and does cause spring breakage. It also may result in accidents.

The main plate of a spring is very materially assisted by all the other plates when graded properly when the vehicle hits a bump and the spring is on the rebound. If it were not for the rebound clips the main plate would absorb all of the rebound shock and, naturally, cause main plate breakage.

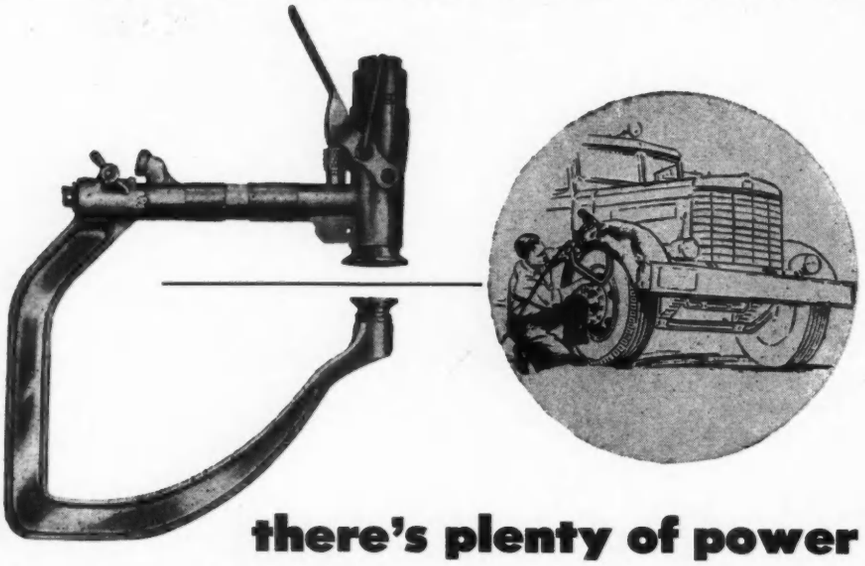
Sagging Springs

SAGGING springs are caused by continuously overloading or by improper heat treatment. If sagging springs are purely a matter of overloading, we would ask the operator for the following information: the net spring weight of the vehicle, plus the maximum loads he is carrying, and, naturally, consider the road conditions over which he is operating. It is then very easy to design a spring that will carry the loads efficiently and eliminate sagging of springs due to stress caused by overloading.

Sheared Center Bolts

THE cause for center bolts shearing is loose U-bolts. When changing a spring, make certain U-bolts are tight. If an air wrench is used, after tightening with the air wrench we suggest that you take an open end hand wrench with the proper amount of leverage and make certain that the U-bolts are tight. One certain way is to sound them with a hammer; anyone can detect a loose bolt by the sound. After you run the vehicle approximately 100 miles, make sure to check the U-bolts again as sometimes small particles of steel, etc., will work out of the spring, and after the spring is properly seated, you can always get a few more turns on the U-bolts. Many times U-bolts seem to be tight, but due to stretching they are at the end of the threads and the U-bolt is loose. This, of course, will cause the spring to work in the saddle and the center bolt will be broken. If the center bolt breaks, it is the beginning and the cause of many spring failures. The one way to check broken center bolts is to note carefully the position of the plates. You will find the plates will shift or you will lose the short plates. If the spring is properly set in the saddle and the U-bolts are kept tight at all times, it is impossible to shear the center bolt. When U-bolts are loose and the brakes are applied, the pressure put on the center bolt head shears it off or the torque will do likewise.

(TURN TO PAGE 114, PLEASE)



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A variable control provides a range of hammering action . . . from heavy blows for the toughest truck fender jobs . . . to light taps for ironing or smoothing operations on passenger car work.

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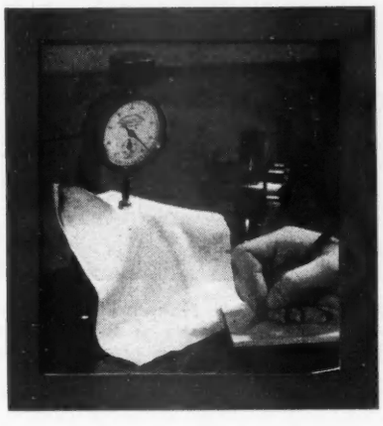

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Murder—Truck Springs

Continued from Page 112

Shock Absorbers

SHOCK absorbers add very materially to reducing your spring breakage. When changing a spring check the shock absorber for any difficulties; it is also important to have the proper installation of the shock absorbers, see that they work freely and there is no bending.

Speeding

EXCESSIVE speeds over the highway, especially in a hilly country, and on roads that have many curves, are the cause of many spring breakages. If we will just picture a unit going over the highway at 60 miles per hour, carrying a load of approximately 20 tons, just try to imagine the amount of pressure that is put into the spring eyes when you make an emergency stop or when rounding a turn and applying your brakes. Speeding over rough roads are, naturally, very costly in spring breakage. It is also impossible for the spring to dissipate the shocks under the extreme rough road conditions and not cause metal fatigue.

Worn Eyes or Bushings

THERE are many types of bushings used, the threaded type being used mainly on buses while many trucks are using bronze bushings. In the case of the threaded type the bushing many times will turn in the spring eye instead of the pin turning in the bushing. In this case spot welding of the bushing will eliminate this condition. If this condition exists and continues to exist the bushing will turn in the eye, wear the eye, and, of course, will cause eye breakage.

With regard to the bronze bushings that wear egg-shaped, they should be checked on your preventive maintenance schedule for this condition. If it does exist, it will also cause eye wear and ultimately eye breakage.

Shackles

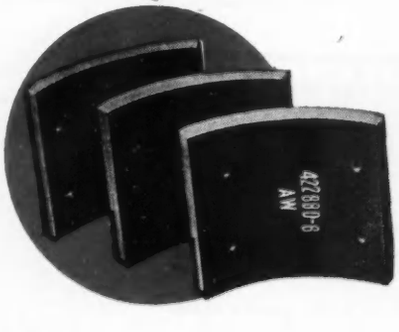
IT IS most important to check the shackles for side wear and to see if the shackle is in a proper setting position. If a shackle is not set properly, which is about 5 deg in the opposite direction from the U-bolts, the result is a sagging spring. If the spring is installed improperly or its length is incorrect, it will sag. This matter should be checked into immediately in order to save breakage. If the shackle is too far forward, it will hit the frame and cause main plate breakage, and if it is reversed it will pull and cause main plate eye breakage.

END

Please resume your reading on P. 66

"Know Their Stuff"

We use Thermoid Heavy Duty Brake Blocks, because the Thermoid people really know their stuff. They're recognized experts in the field of brake maintenance—and whether it's Brake Parts, Brake Fluid or *Heavy Duty Brake Blocks*, we've always found Thermoid brake products completely dependable in every way. We're bugs on *economy*, too. That's another reason why we use Thermoid Heavy Duty Brake Blocks. They're engineered for long, money-saving service.



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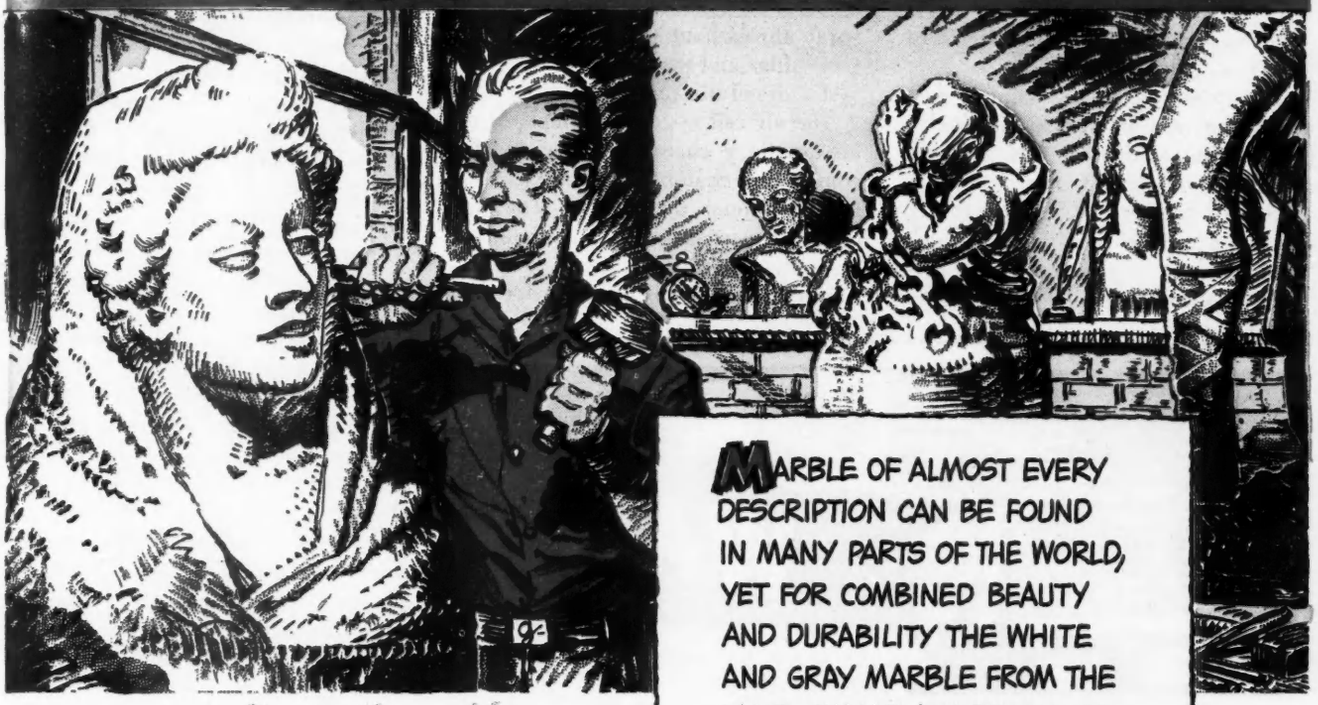
Bus Body Assembly Line

School bus body frames of all-welded construction are shown being assembled on the 35-station production line of the Ward Body Works, Inc. By reducing the frame section two gages from the thickness of mild steel that would be required, a lighter framework is obtained without a sacrifice of strength. Exterior panels of carbon steel are riveted in place further along the line. Production capacity of this line is 100 bodies per week

NATURE'S BEST IS TOUGH TO BEAT



MARBLE OF ALMOST EVERY DESCRIPTION CAN BE FOUND IN MANY PARTS OF THE WORLD, YET FOR COMBINED BEAUTY AND DURABILITY THE WHITE AND GRAY MARBLE FROM THE LAKE CHAMPLAIN REGION OF VERMONT IS NATURE'S FINEST.

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TIDE WATER ASSOCIATED OIL COMPANY

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The Diesel Fuel System

Continued from Page 73

turbulence and mixing. The Hercules diesel is of this type.

The precombustion chamber system makes use of a cavity located in such a position that the fuel from the nozzel enters here first under relatively low pressure. From this cavity the fuel passes into the main combustion chamber through a series of orifices arranged so as to disperse the spray throughout the chamber. The Caterpillar and the International Harvester diesel use this system.

The air cell system is composed of an auxiliary chamber added to the combustion chamber space to provide for additional turbulence. The air cell is connected to the main chamber through a narrow throat. In the Cummins diesel this cavity is located in the piston crown; other manufacturers locate it in the side of the main chamber. Upon ignition the pressure rise increases the pressure of the air trapped in this air cell, but as soon as the piston starts downward, the pressure drop permits this trapped air to blast through the throat into the combustion chamber to complete the combustion of the fuel. The Acro system is a modification of this system.

The Lanova or energy cell system provides for controlled turbulence within the main chamber by means of a violent blast from an energy cell. This cell may be either double or single lobed, connected to the main chamber through series of restricted openings and set in the cylinder head just opposite the injector. On the compression stroke air is forced into this cavity, and upon injection part of the fuel spray is carried in with the flow of air. As the piston reaches dead center flame from the main chamber reaches the energy cell and ignites the fuel mixture. The swirling motion produced by the blast from the cell produces a thorough mixing of the fuel and air in the chamber and causes rapid and controlled combustion. Just as the throat of the energy cell slows down the flow of air into it during compression, this restricted passage measures and times the rate at which the high energy cell pressures escape back into the chamber. Thus maximum pressure is applied to the piston at a more favorable crank angle and is extended over a longer period of time. This results in smooth, even application of pressure with a low rate of pressure rise. This system with modifications is used on the Buda, Dodge, Mack diesel engines.

The injection system is probably one of the most critical components of the diesel engine. Injection techniques, for this reason, vary considerably among manufacturers, and each maker has solved particular problems with respect to pressures, combustion control and maintenance facilities for the equipment. Three basic types characterize the popular automotive diesels of today. These are the American-Bosch system, with pump injection; the Cummins system, with distributor injection, and the GM system, with unit injection.

All systems make use of mechanical injection employing pumps or

(TURN TO PAGE 120, PLEASE)

Are You SURE It Needs An Engine Job?

Before you tear down that engine because she's pumping oil and is sluggishly lazy . . . give it a Magnus 755 desludging. Then, take compression readings and you'll know whether she goes back into service immediately, cured of her stuck rings and clogged lubrication, or stays in the shop for an overhaul!

Desludging often eliminates the need for an overhaul by freeing rings and opening up lubrication lines. Periodic desludging will lengthen the time between tear-downs. Desludging before every engine overhaul will assure you of a clean engine including oil lines and screens.

Desludging with Magnus 755 costs little, yet can save you much!

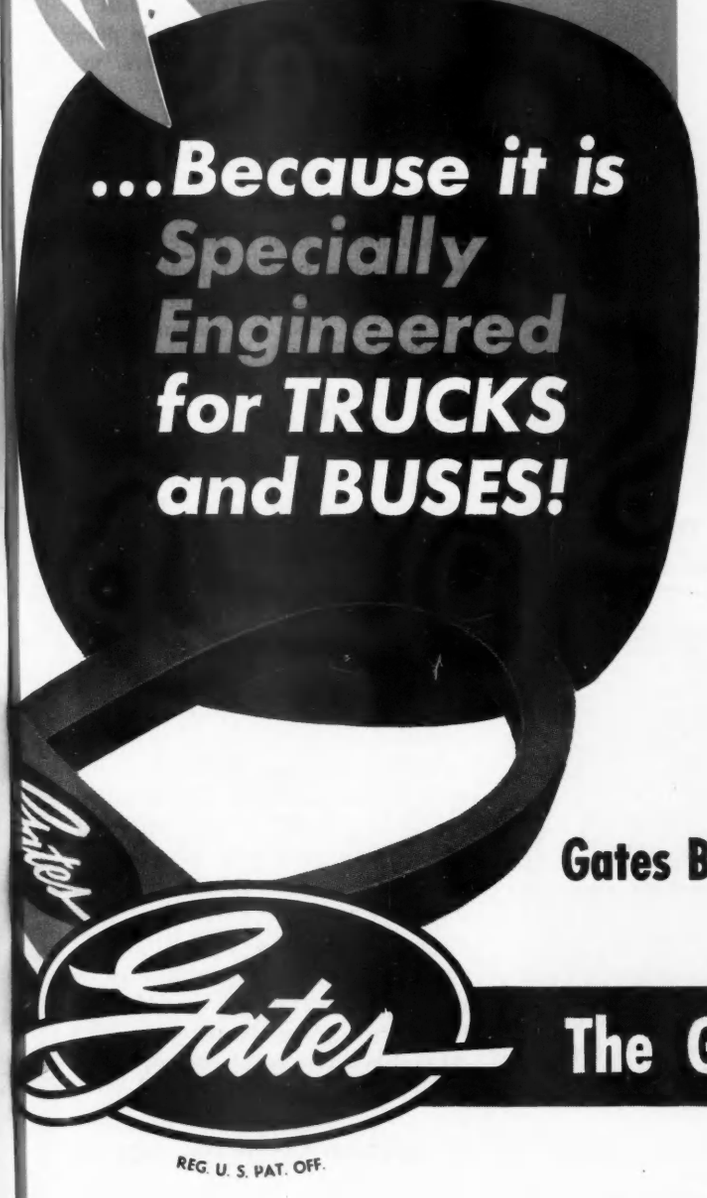
Desludging is only one of the cleaning shortcuts described in the Magnus Truck and Bus Cleaning Handbook. Write for your copy today!

MAGNUS CHEMICAL CO., 38 South Ave., Garwood, N. J. In Canada — Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.

Magnus

CLEANERS • EQUIPMENT • METHODS

"...The GATES TRUCK BELT gives us 75% LONGER WEAR!"



REG. U. S. PAT. OFF.

The Oriole Motor Coach Lines of Pittsburgh—whose letter appears on the opposite page—is just *one* of *many, many* Fleet Owners whose actual records show that GATES TRUCK BELTS are giving them 50% to 80% *longer wear* than any belt they ever used before!

As evidence, we list also the names of big fleet operators all over the U. S.—surely one in your vicinity whom you *know* and can *ask*—and every one of these operators will tell you they are not only saving 50% to 80% in *belt costs* by using GATES TRUCK BELTS but are also realizing *additional savings that are even* greater!

Biggest Saving Comes From Reducing Road Delays

You will notice that the Oriole Motor Coach Lines letter says that prior to using Gates TRUCK Belts they had an average of two road calls per week due to fan belt failure and are now entirely free of these most expensive road delays.

Delays on the road naturally cause disappointment to your customers who are often waiting anxiously for delivery of important shipments. *Even worse than that,* road delays cut down the precious *net operating time* of your units—and net operating time is, after all, the *one* thing that pays you a profit.

Because of the proved gains in operating time the Gates TRUCK Belt is giving other successful operators—in addition to very substantial savings in belt costs—we believe that starting TODAY, you will want to insist on having Gates TRUCK Belts on *your* TRUCKS and BUSES.

Gates Belt Jobbers in Every City Can Supply You Promptly

T-505

The GATES RUBBER COMPANY

World's Largest Makers of V-Belts

DENVER, U.S.A.

Diesel Fuel System

Continued from Page 116

hydraulic pressure to inject fuel into the combustion chamber. Atomization is accomplished by a fine spray under high pressure, introduced through orifices at the nozzle tips. The fuel spray in all types is controlled by a needle valve acting against spring tension in the nozzle, or by mechanical action. The amount of fuel and therefore the engine speed, is controlled by the amount of travel of the plungers in the injectors or by helices cut into the plungers to limit the amount of fuel delivered by each stroke. This is accomplished by various methods best suited to the particular design.

In the common rail system fuel is forced under high pressure by a central injection supply pump into a common tube which runs the full length of the engine with fuel lines running off to individual injectors. The metering and timing are controlled by governor-controlled cams which actuate the injector needle valves.

The pump injection system uses an individual pump for each cylinder, powered through a special cam takeoff from the engine. Pressure, metering, timing are a function of the pump which supplies fuel through individual lines to each injector. The American-Bosch system, used on several makes of diesels, is of this type.

The distributor system used by Cummins consists of a transfer pump, a pressure pump, a single cam-actuated injection pump, a rotating distributor disc, with fuel lines and injectors. Fuel is delivered from a low pressure pump to a central distributor which meters and delivers fuel to the injectors. The distributor is a rotating disc with fuel passage connections which control the flow of metered fuel to the injectors. Here the pressure is built up by cam-operated rocker arms working against injector plungers. With a single pump supplying fuel to all cylinders, uniform distribution is assured.

The GM system of unit injection is complete in a single separate unit mounted on the cylinder head and driven by the camshaft through rocker arms. Fuel is delivered under low pressure to the injector, which meters, pressurizes and times it to the engine. A separate system is provided for each cylinder.

Combustion efficiency depends much upon the injection nozzle used, but in any case this unit is matched to the system and is beyond the scope of the fleetman in choice. It will be noted that where turbulence is not provided for, multiple outlet orifices are used in the nozzles to improve mixing of the fuel and air, while with turbulence chambers, single jet nozzles are generally employed. This equipment in any diesel engine must be designed to work against high pressures, to close with precision so that leakage and dribble is eliminated between injections. For this reason dirt and foreign particles will affect the operation of the spray and the resulting efficiency of combustion. Thus, inspection, cleaning and setting become one of the main problems of the user. It is his responsibility to maintain these precision parts to high standards if they are to meter, diffuse

(TURN TO PAGE 123, PLEASE)

Here's top filtering mileage!

Yours with Purolator Micronic's* 10 feet of filtering surface that holds 290% more dirt!

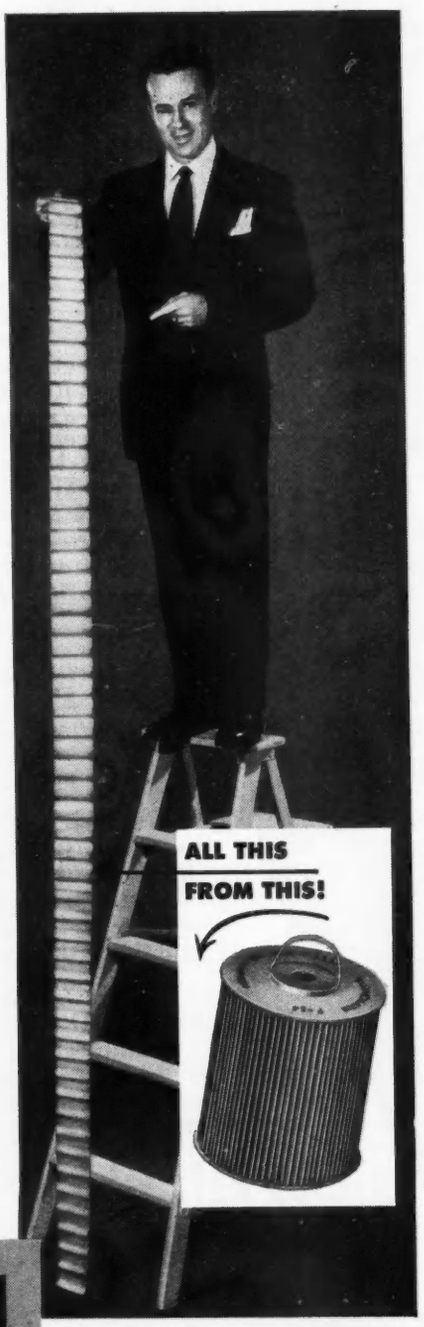
You'll find that Purolator Micronic* Oil Filters last longer—save important money in refill purchases.

That's because even the smallest automotive type Micronic* element has 570 square inches of effective filtering surface compared to 54 square inches in ordinary oil filters . . . holds much more dirt.

Even more important . . . Purolator Micronic* saves big money by giving your fleet top protection from engine-wrecking abrasives. It removes particles measured in microns (.000039 of an inch) from the oil. It traps an average of 290% more abrasive than comparable size filters as proved by competitive tests!

Cut your refill bills, down-time engine repairs. Contact your Purolator supplier for a Micronic* refill for practically any make vehicle or original filter!

*Reg. U. S. Pat. Off.



PUROLATOR
MICRONIC OIL FILTER
"FIRST IN THE FIELD OF FILTERING"

PUROLATOR PRODUCTS INC.
Rahway, New Jersey and
Toronto, Ontario, Canada

Diesel Fuel System

Continued from Page 120

and time the fuel efficiency to the requirements of the engine.

A method sometimes employed by the manufacturer for improving combustion efficiency and upping horsepower is the supercharger. With this unit additional air can be forced into the cylinder and extra fuel can be utilized. Cummins, for example, ups ratings as much as 75 hp with the use of a supercharger in one of their engines. Superchargers are made in the form of engine-driven compressors, in turbo-chargers driven from the exhaust system, in centrifugal blowers powered by the engine. The additional power, however, is somewhat offset by the power required to drive the supercharger. Increased weight, too is a factor in choosing this unit for the diesel engine. Advantages of this unit include the fact that aspiration is improved so that a greater proportion of waste heat is carried off with the exhaust gases. Thus less heat flows into the water jacket and engine parts.

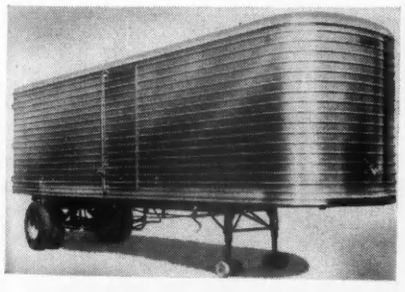
Another unit in the fuel injection system of prime importance in control of combustion is the governor. A governor is more critical on the diesel since this type engine is more responsible to the throttle. Thus results from the fact that the burning of the fuel causes the same amount of energy to be imparted to the crankshaft for each injection regardless of speed. Thus a quick opening of the throttle could result in a violent response of the pistons and crankshaft, resulting in damage to moving parts. For this reason the accelerator is connected directly to the governor, which in turn dampens out wide variations in accelerator setting.

Most governor units are comprised of a centrifugal device which positions the fuel pump metering adjustment to maintain engine speed regardless of load variations. However, hydraulic types are sometimes employed where the governing element is controlled by centrifugal action, which in turn operates a pilot valve to control the injector setting through an oil medium. And still another type is actuated by engine vacuum, being controlled by a butterfly valve in the carburetor with a vacuum line leading to the fuel injection controls. Thus the fuel supply is directly proportional to the air supply at all loads.

END

Please resume your reading on P. 74

Lightweight Gramm



The full framed aluminum Gramm Trailer Corp.'s superliner, incorporates Z body posts with side and roof panel having trapezoidal corrugations on 5-in. centers. Frame is of pressed steel with 5-in. drop. Tandem axle, side doors, fiberglas insulation and lengths from 26 to 32 ft are optional features available

"Equipping my trucks with Servis Recorders saved buying an additional truck..."

"5 Trucks Now Do the Work of 6"

"But first of all," continued the boss, "I had a thoroughgoing talk with our truck manager out back, Ed Jones. We went over our many delivery *headaches* in detail—crowded schedules, delays, overtime, etc. Jonesy had been needling me for many months to buy an additional truck. But I wanted to see if we couldn't save that big investment by getting more work out of our present trucks.

"So we decided to try equipping our trucks with *Servis Recorders.* First we had a friendly talk with the drivers as to just what we were trying to do—to win their good will and cooperation.

"Well, sir, it worked! The performance of our trucks improved *markedly!* Now, Ed Jones admits that he can meet all delivery schedules without that additional truck he was yelling for."

There's a "moral" in all this for YOU. Write for our 16-page illustrated booklet—"*Ten Ways of Getting More Work Out of Motor Trucks.*" It's free.

The Service Recorder Company,
1375 Euclid Ave., Cleveland 15, O.

The Servis Recorder

Tells Every Move Your Truck Makes

Washington Runaround

Continued from Page 37

ICC Continues PIE Probe

Verbal fireworks can be expected at Interstate Commerce Commission headquarters on July 27, the date set for oral argument on the examiner's report in the Pacific Intermountain Express case. The examiner recommended that P. I. E. be authorized to acquire Keeshin Freight Lines, which represents a signal victory for long-haul truckers. This case is one of 43 pending on which 90 railroads have asked the ICC to postpone action until a general investigation of long-haul trucking can be completed (CCJ, June, pg. 170).

If the commission should approve the examiner's report, it would mean the creation of a new transcontinental trucking system. Examiner Henry J. Raley demolished most of the arguments of more than 30 railroads which intervened in the P. I. E. case. For example, he pointed out that "the assumption that railroad rates would be lower if motor competition did not exist is of doubtful validity." He further recommended the apparent railroad theory that "it is useless to attempt to regain traffic lost to motor carriers or even to stop further losses of tonnage through improved service or downward rate adjustments." Rail claims that trucks skim off the cream of traffic and do not provide adequate service were also brushed aside.

THE ONLY DIRECTIONAL SIGNAL WITH THE
BURN-OUT-PROOF SWITCH

Favored because of their dependability and safety by both owners and drivers, Signal-Stats offer protection under all sorts of operating conditions. Approved by American Association of Motor Vehicle Administrators (AAMVA) and States requiring directional signals.

Signal-Stat CORPORATION
SIGNAL-STAT BUILDING
1430 Herkimer St., Brooklyn 33, N. Y.

Fleming Heads Transport Group

Next step in consolidating Government transportation activities within the Commerce Dept. is likely to be a request for transfer of the non-regulatory functions of the Interstate Commerce Commission. Already approved by Congress has been the transfer of the Bureau of Public Roads and more recently the creation of the post of Under Secretary of Commerce for Transportation. President Truman has stated that the new post will provide "central leadership in transportation matters" within the Federal Government. The spot has been filled by Maj. Gen. Philip B. Fleming, former chairman of the now-defunct Maritime Commission and Chairman of the President's Highway Safety Conference. Other agencies, concerned with transportation matters, now within the Commerce Dept., are the new Maritime Board, Civil Aeronautics Administration, Inland Waterways Corporation, Weather Bureau, and the Coast and Geodetic Survey.

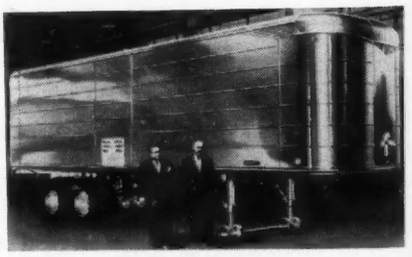
Md. Bus Law Upheld

The Supreme Court has upheld a Maryland law imposing a 2 per cent title tax on the "fair market value" of motor vehicles using the state's highways. In the case involving the Greyhound Lines and Red Star Motor Coaches, Inc., the carriers contended that the tax should be invalidated because it is not uniform among carriers in relation to their use of Maryland roads. The Court held, however, that the tax is not excessive and does not constitute an unreasonable burden on interstate commerce.

END

Please resume your reading on P. 41

Fruehauf's Newest Addition



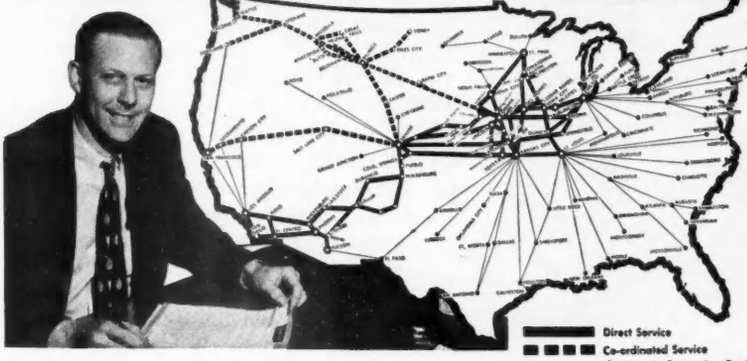
This aluminum aerovan, recently unveiled by Fruehauf Trailer Co., is a 32-ft model featuring torsion tandem with forged aluminum wheels, gear boxes, vertical supports and underframing of aluminum and magnesium floor. Van weighs 9,200 lb. Shown are W. J. Robinson, vice-president and director of sales, and F. M. Reid, vice-president in charge of engineering

30,000,000 MILES A YEAR!

Firestone TIRES

are Money Savers for Watson Bros.

OMAHA, NEBRASKA



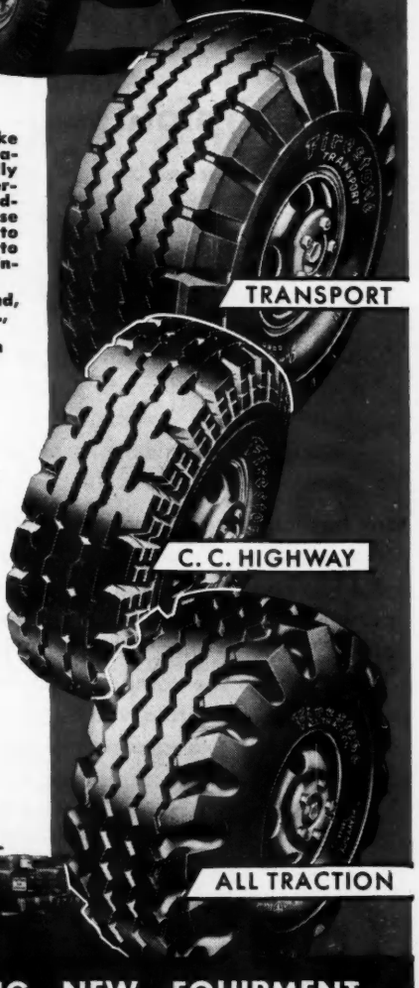
"In a business like ours, tire operation is practically a science. Cost-per-mile is our yardstick, and we use Firestone Tires to hold this figure to an absolute minimum."

Mark S. Borland, Purchasing Agt., Watson Bros. Transportation Co., Inc.

IT TAKES 10,000 tires to equip Watson Bros.' great fleet of more than 700 tractors and 900 trailers. Running on schedules that average 100,000 miles day, they roll up a total of 30 million miles a year. So . . . if anyone should be an authority on tire performance, it's Watson Bros.

Watson Bros. always count on Firestone Tires to help keep their units up to schedule and their costs down to rock bottom. Experience has proved to them that — load for load . . . road for road . . . mile for mile — Firestone Tires deliver maximum dollar-for-dollar value. Try them on your equipment, and you'll find there's no substitute for the quality and the skilled know-how that go into Firestone Tires.

Listen to the Voice of Firestone every Monday evening over NBC



ALWAYS SPECIFY FIRESTONE TIRES WHEN BUYING NEW EQUIPMENT

Copyright, 1950, The Firestone Tire & Rubber Co.

Capital Slashed Costs

Continued from Page 58

tion has become much improved. The men we now have are better trained through thorough "on the job" training. This enables us to reduce the total overall number.

Changes in Work Setup

ALL these changes and reductions naturally called for changes in the work setup, and so far we have managed very well with the reduced force.

To enumerate all changes made would take too much time and space. I will, however, cite a few.

In our paint shop, we reduced the force by 70 per cent. This was our most drastic cut. Our vehicles were generally in good condition paintwise. We retained sufficient men in the paint shop to take care of body repair jobs and touch-up work. In addition, we hoped to repaint some vehicles completely, although a lesser amount than formerly.

In the first two months, we actually maintained 50 per cent of our former production, in spite of the 70 per cent reduction in personnel. We simplified some of our painting procedures. In place of the application of primer followed by surfacer, we now use a primer-surfacer known as a sealer—a one-coat job. We are not so particular on a perfectly sanded surface or on filling up small dents or scratches not too apparent to the eye. I am sure that if you would look at some of our recently-painted vehicles, you would have no criticism of the job, unless you use a magnifying glass.

On cars on which we use synthetic enamel, it is frequently noticed that on the upper portion, above the window sills, the paint is in good, sound condition. A thorough cleaning makes it appear as good as new. We then only, if necessary, spray the lower portion, which has been subject to more abuse, scratching, etc. The vehicle looks as good as a completely painted job. On buses this procedure also is followed, but to a much lesser degree.

At our garages and garage yards, it was customary to hand sweep and wash the floors. (We use an oil-absorbing compound on the floor.) Now, we have in use one motorized floor sweeper and vacuum cleaner unit, which cost $2,200 and released one man. We have three more of these on order. When received, each will replace a man.

For each of the six garages we have purchased a brake drum lathe and brake doktor. The use of these tools released one man at the bus shop and saved the transportation of drums to and from the shop and garages. And we are enjoying a considerable saving in drum life and linings. Before being put into service, all new drums are mounted on the wheels and tested on the lathe. Usually, it is necessary to machine them to make them concentric.

Each garage had a storekeeper and garage clerk. At two of the small garages the duties of the storekeeper and clerk have been combined, with a reduction of two clerks.

Trash collection throughout our system was handled by the mechanical department with two trucks, each with two men. This job has now been farmed out to a local concern, eliminating four men and the use of two trucks. This resulted in a considerable saving over the price we formerly were paying; around $12,000 a year.

We have cut down our rail shop material delivery trucks from two to one. The underground plow delivery trucks make three instead of five deliveries per week.

(TURN TO PAGE 128, PLEASE)

Another S&J Contribution

To Safer and More Efficient Delivery of Petroleum Products

The Hydrafold

A hydraulic manifold

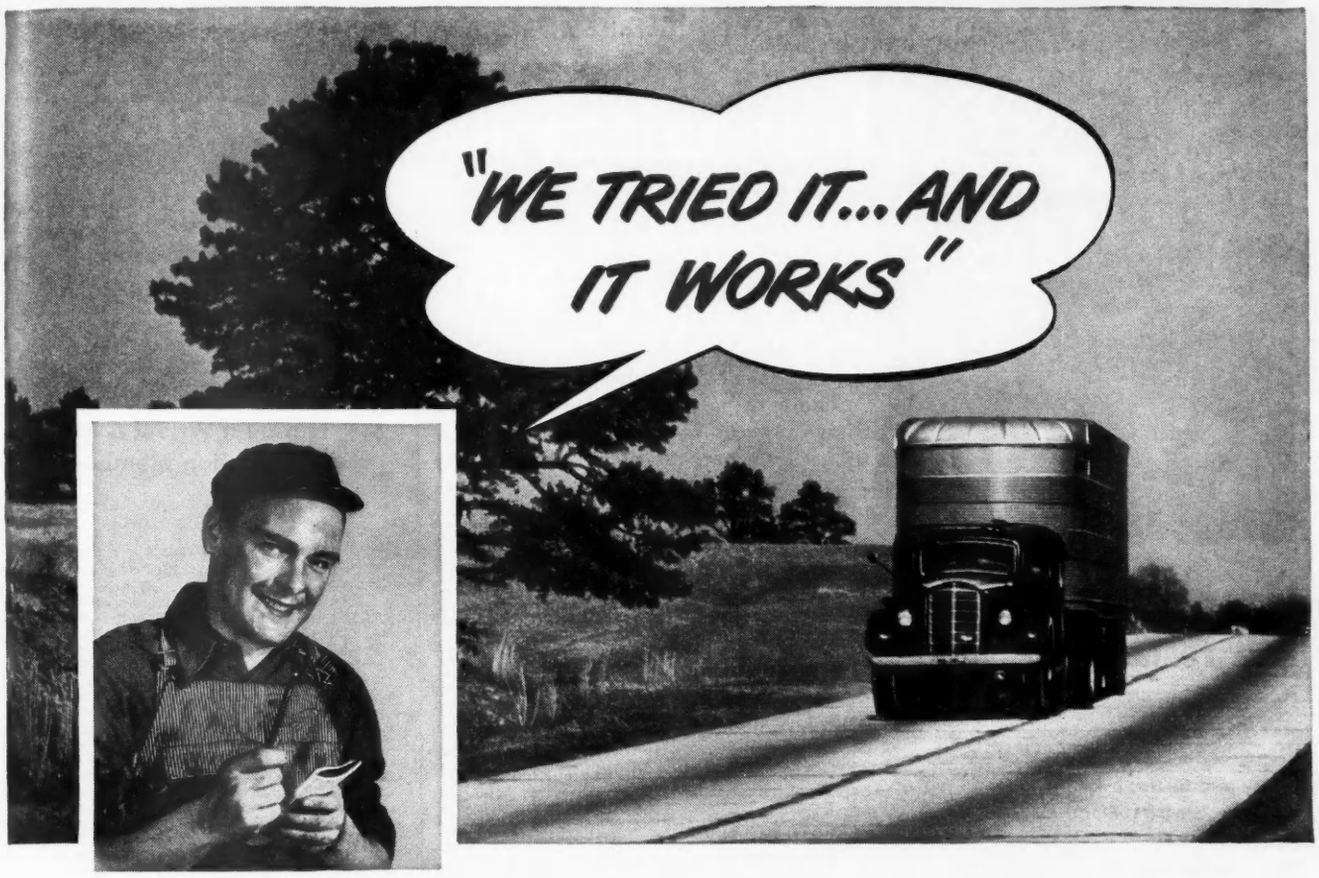
MANIFOLDING the discharge lines of a petroleum truck tank has long been a manual operation which not only takes time, but often causes confusion and costly mistakes when discharging a load. S & J has engineered and now offers the HYDRAFOLD—a hydraulically operated manifold as a companion to our hydraulic internal safety valves. Through the "selective type" operator, the hydraulic pump which actuates the compartment internal valves, you may now open and close the manifold valves with the same positive hydraulic pressure. Note detail construction of the valve in the line drawing above—construction that reduces product contamination to less than a pint in a 2" Hydrafold. Write for our new descriptive folder on the HYDRAFOLD.

SHAND & JURS CO.

BERKELEY, CALIFORNIA

NEW YORK CHICAGO HOUSTON LOS ANGELES SEATTLE

SHAND & JURS

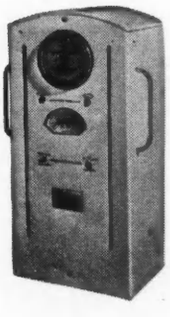


"Now every unit in our fleet is rolling at a cost-per-mile reduction of one full cent!

"Frankly we were skeptical the day a Cities Service Fleet Lubrication Engineer outlined his Controlled Oil Change Plan. But today we are glad we listened. You can look at the results on a reduced maintenance cost basis or an improved performance basis... they're pretty amazing."

"HERE'S HOW IT WORKED FOR US...

"Step No. 1—was a thorough engine cleaning of every unit in the fleet with an exclusive Cities Service product—Cisco Solvent. That's an engine cleaner that beats them all.



"Step No. 2—was testing with a Cities Service Power Prover. This amazing instrument hooks up to the exhaust. It tells you in a couple of minutes the where, what and how of combustion efficiency.

"Step No. 3—was a full crankcase of Cities Service Heavy Duty motor oil. It's a motor oil that can't be topped as far as we are concerned for tough all-around heavy duty service.

"From then on—as these units went back into service—we watched our operation charts carefully. We set up a rigid oil change system. This was gauged on the type of operation, climate and driving conditions. This system was designed to provide the maximum amount of lubrication protection before contamination made oil changes necessary.

"It was as simple as that! In two months' time costs went down all along the line... and they stayed down."

A complete new line of automotive lubricants, comprising Regular, Premium and Heavy Duty oils for Gasolene and Diesel Engines, also Regular and Multi-Purpose Gear Oils and Greases.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

BIG NEWS!!

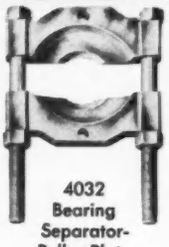
More PROTO* Octopullers !!

NEW Pullers!
NEW Features!!

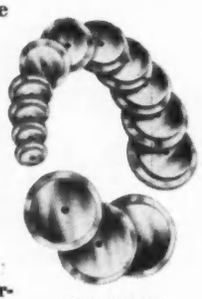
Our Octopuller has several new brothers, to help you do more jobs—better and faster. For example, all PROTO* puller screws now have "live center" tips to prevent shaft damage. Five jaws have holes to allow bolting together, thus saving the cost of extra long jaws. These tools and the other pullers illustrated feature the famous PROTO* interchangeability of parts. To save precious hours, grab your hat, hurry to your PROTO* dealer and arm yourself with these new pullers! Write for catalog to

PLOMB TOOL COMPANY

2269W Santa Fe Ave.,
Los Angeles 54, Calif.



4032 Bearing Separator-Puller Plate



4040-1 to 14 Puller Step Plates

4022TS "Live Center" Screw Tip

*PROTO means PROfessional TOols. It's the new name for the tools that have been preferred for 43 years.

5085

PROTO
Professional Quality ®
TOOLS
LOS ANGELES

Capital Slashed Costs

Continued from Page 126

Shop cleaners and janitors have been reduced by, roughly, 50 per cent.

We have been compelled, due to our reduced force, to overhaul both cars and buses on a purely condition basis. This procedure calls for a most complete inspection procedure at garages and carhouses.

I might say, here, that the inspection procedures have not been affected by our personnel cuts. In fact, it has been improved by the extension of the mileage between inspections; giving the inspectors more time on each job. We realize, of course, that inspections are the heart of our maintenance system.

Another interesting item of savings was a campaign of training men to save light and power by cutting off, wherever possible, all circuits not needed. This has resulted in a saving of 21 per cent in our power bill for all buildings, shops, etc.

The use of water and city gas has also been carefully followed and some economies are now being shown.

Engineering Staff Helpful

I HAVE found that the small engineering force we have, led by Mr. Savage, has proved to be very worthwhile. Every new device, material, or method is studied and tested by this group, and many savings have been made. At the same time, a large number of items various purveyors offered us for use have been thrown out by a short time test, saving much time against service testing; although, of course, service tests are also carried on. A record is kept of all these tests, and we can refer to them at any time.

We have standardized for some time the use of trolley slides in place of trolley wheels on some streetcars and are very satisfied with the results. Not only have the dewirements been almost eliminated, but the savings of the new trolley wire alone has amounted to approximately $10,000 yearly, and it must be remembered that we only have trolley wire on 44 per cent of our trackage. In years before slides it was customary to erect about 5 miles of wire yearly. Last year only 1200 feet was put up, and most of this was necessary due to a bad ground which developed.

To sum up this phase of my talk, I might say that between April, 1949, and April, 1950, we have made a total reduction of 25 per cent in personnel in the mechanical department. One interesting result was that the men retained immediately got on their toes and improved their individual output.

END

Please resume your reading on P. 59

Stronger

Dayton Fifth Wheels are Distributed through National Wheel & Rim Association Members

AKRON, Ohio.....Motor Rim Manufacturers Co.
ALBANY, N. Y.....Wheels Incorporated
ALBUQUERQUE, N. M.....Wheels & Brakes, Inc.
ATLANTA, Ga.....Harris Automotive Service, Inc.
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CALGARY, Alta., Canada.....Fisk Tire Service, Ltd.
CHARLOTTE, N. C., Carolina Rim & Wheel Company
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CLEVELAND, Ohio.....Motor Rim Manufacturers Co.
COLUMBUS, Ohio.....Hayes Wheel & Spring Service
CUMBERLAND, Md.....R. W. Norris & Sons
DALLAS, Texas.....Southwest Wheel, Incorporated
DAVENPORT, Iowa.....Stone Wheel, Incorporated
DAYTON, Ohio.....Rim & Wheel Service
DES MOINES, Iowa.....Des Moines Wheel & Rim Co.
DENVER, Colo.....Quinn & McGill Motor Supply
DETROIT, Mich.....H. & H. Wheel Service, Inc.
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EDMONTON, Can.....Alberta Wheel Distributors, Ltd.
FARGO, N. D.....Pioneer Rim & Wheel Company
FARGO, N. D.....Wheel Service Company
GRAND RAPIDS, Mich.....Rim & Wheel Service Co.
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HARRISBURG, Pa.....Standard Wheel & Rim Co.
HARRISONBURG, Va., Harrisonburg Wheel & Parts, Inc.
HARTFORD, Conn.....Connecticut Wheel & Rim Co.
HOUSTON, Texas.....Southwest Wheel & Equipment Co.
INDIANAPOLIS, Ind.....Indiana Wheel & Rim Co.
JACKSONVILLE, Fla., Southeast Wheel & Rim Co.
KANSAS CITY, Mo.....Borbein, Young & Company
KNOXVILLE, Tenn.....Harris Automotive Service, Inc.
LOS ANGELES, Motor Rim & Wheel Service of Calif.
LOUISVILLE, Ky.....Auto Wheel & Rim Service
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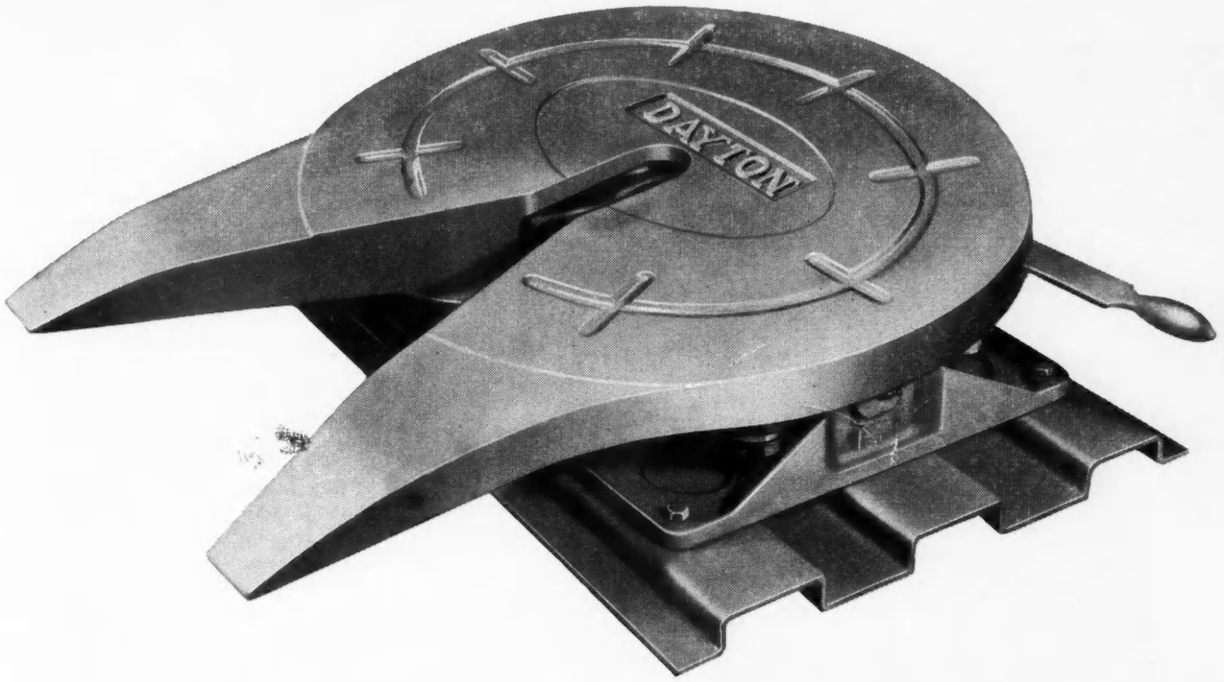
OKLAHOMA CITY, Okla.....Southwest Wheel, Inc.
OMAHA, Nebr.....Morgan Wheel & Equipment Co.
OMAHA, Nebr.....Omaha Rim & Wheel Company
PEORIA, Ill.....Peoria Wheel & Rim Company
PHILADELPHIA, Pa.....Kay Wheel Sales Company
PHILADELPHIA, Pa., Thomas Wheel & Rim Co., Inc.
PITTSBURGH, Pa.....Wheel & Rim Sales Company
PORTLAND, Oregon.....Auto Wheel Service
PORTLAND, Oregon.....Six Robblees, Incorporated
RALEIGH, N. C.....Carolina Rim & Wheel Company
RICHMOND, Va.....Dixie Wheel & Rim Company
ROCHESTER, N. Y.....Frey, The Wheelman, Inc.
ST. LOUIS, Mo.....Borbein, Young & Company
SALISBURY, Md.....R. W. Norris & Sons
SALT LAKE CITY, Utah, Henderson Wheel, Rim Serv.
SAN ANTONIO, Texas, Southwest Wheel & Equip. Co.
SAN FRANCISCO, Motor Rim & Wheel Serv. of Calif.
SEATTLE, Wash.....Six Robblees, Incorporated
SOUTH BEND, Ind., Wire & Disc Wheel Sales Co.
SOUTH HILLS, Va., South Hills Wheel & Parts, Inc.
SPOKANE, Wash., Bearing & Rim Supply Company
SPRINGFIELD, Ill., Illinois Wheel & Brake Company
SPRINGFIELD, Mo.....Borbein, Young & Company
SYRACUSE, N. Y.....Colbourn Wheel & Rim Company
TACOMA, Wash.....Six Robblees, Incorporated
TOLEDO, Ohio.....Wheel & Rim Sales Company
TORONTO, Canada.....Harpham Brothers, Ltd.
TORONTO, Canada, Wheel & Rim Co. of Canada, Ltd.
VANCOUVER, B. C., Canada.....Wheel & Equip., Ltd.
WICHITA, Kansas.....Borbein, Young & Company
WINCHESTER, Va.....R. W. Norris & Sons
WINNIPEG, Can., Automobile Supply Company, Ltd.
WINNIPEG, Canada, Fort Garry Tire & Service, Ltd.
WINSTON-SALEM, N. C., United Automotive Service

...Quicker and Easier to Operate—
DAYTON Model FWH Fifth Wheels



Road-proven Dayton Fifth Wheels are acclaimed by users everywhere for their superior design and construction. They are stronger, wider—provide better support for heavy loads. They are lower in height to decrease slap when coupling. And they provide positive protection against accidental unlocking. One simple operation, and the locking device is set for good.

Engineering features of Dayton Fifth Wheels are typical of all products bearing the *Dayton* trade mark. Larger, hardened bearing surfaces of the coupler jaw hub assure longer operating life. Hardened jaw pins are set securely in the base for extra strength. Oversize bushings—dimpled to retain grease—give extra wear. Pressure grease fittings on jaw pins, rocker pins and base provide for better lubrication.

See *all* these outstanding features, and you'll see immediately why Dayton Steel Fifth Wheels *belong* in your specifications.

THE DAYTON STEEL FOUNDRY COMPANY, DAYTON 1, OHIO

DAYTON *Fifth Wheels*

DAYTON SPOKE TYPE CAST STEEL WHEELS
. . . run cooler, give long life and lower operating costs.

DAYTON BRAKE DRUMS
Drums assembled to the wheels at the factory give more perfect concentricity.

DAYTON LANDING GEARS
Made in both hydraulic and mechanical types.

CCJ News Reports

Continued from Page 27

McCabe-Powers Acquires American Coach & Body

McCabe-Powers Auto Body Co., St. Louis, Mo., has purchased the American Coach & Body Co., Cleveland, Ohio, manufacturer of automotive equipment for public utilities. The announcement was made jointly by John J. Powers, vice president of McCabe-Powers and Robert W. Hadley, president of American Coach & Body, following a recent meeting of the Cleveland firm's board of directors.

Definite plans for absorption of American Coach & Body by McCabe-Powers as yet have not been completed. However, it is known that the products of both companies will continue to be manufactured in both companies' plants. In addition, McCabe-Powers is about to acquire additional plant facilities at an undisclosed location in the East. The American Coach & Body plant at Oakland, Cal., will continue operation under McCabe-Powers management. The Public Utility Div. of McCabe-Powers, with this acquisition of American Coach & Body, will be known as the "Powers-American" Div. of the firm.

1950 Motor Truck Factory Sales by G.V.W.*

	5,000 lb. and Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	39,252	19,251	6,804	13,093	2,680	1,816	1,482	84,378
February	39,629	17,151	6,032	11,739	2,720	2,157	1,511	80,939
March	47,828	20,921	7,200	14,644	3,680	3,474	2,062	99,809
April	46,375	19,025	5,884	12,971	3,391	3,322	2,326	93,294
Total—4 Mos., 1950	173,084	76,348	25,920	52,447	12,471	10,769	7,381	358,420
Total—4 Mos., 1949	145,054	104,390	32,556	65,255	11,192	7,791	5,317	371,555

* Automobile Manufacturers Association.

More Sales . . . More Profits
with the New 1950
MORRISON Carry-All

Morrison "Carry-All" Model B-910

The World's First Mass-Precision All-Industry, All-Purpose, All-Steel Service Body that Fits All Standard Commercial ½, ¾ & 1 Ton Truck Chassis!

"Carry-All's" exclusive design and its extensive tooling and engineering make possible heavy gauge steel construction and a unique bridge-type underbody . . . these make possible huskier construction with lighter over-all weight and fewer number of parts than any comparable body on the market.

Write for the new bulletins on the guide to the selection of service bodies. They're yours free for the asking.

MORRISON STEEL PRODUCTS, Inc.
603 AMHERST ST. *Carry-All Body Division* BUFFALO 7, N. Y.

Propane Supply Adequate

"The available supply of propane motor fuel far exceeds any forseeable demand," according to L. J. Fageol, Twin Coach Co. president. The statement was issued in answer to rumors that present widespread conversion to propane by the nation's bus lines might cause serious shortages of this fuel and result in increased prices.

"Petroleum industry authorities now estimate our available supply of propane at 15 billion gal annually," Mr. Fageol said.

"By contrast to this figure, if all of the nation's urban buses were to suddenly operate 100 per cent on propane, their total requirements would be only 625 million gal annually.

"Addition of this amount to the present U. S. propane consumption of 2¾ billion gal yearly would represent a total annual demand of only 3⅜ billion gal. Obviously, we would still have 11⅝ billion gal of unused, surplus propane capacity. It is apparent that the day of propane shortages and increased prices is still very far off."

Drohan Elected President of CMFA

William F. Drohan, trustee of the Keeshin Motor Freight System, Chicago, was recently elected president of the Central Motor Freight Association, Inc.

Drohan succeeds Si Fisher of Chicago as Central Motor Freight president. Chester G. Moore was re-elected chairman of the board.

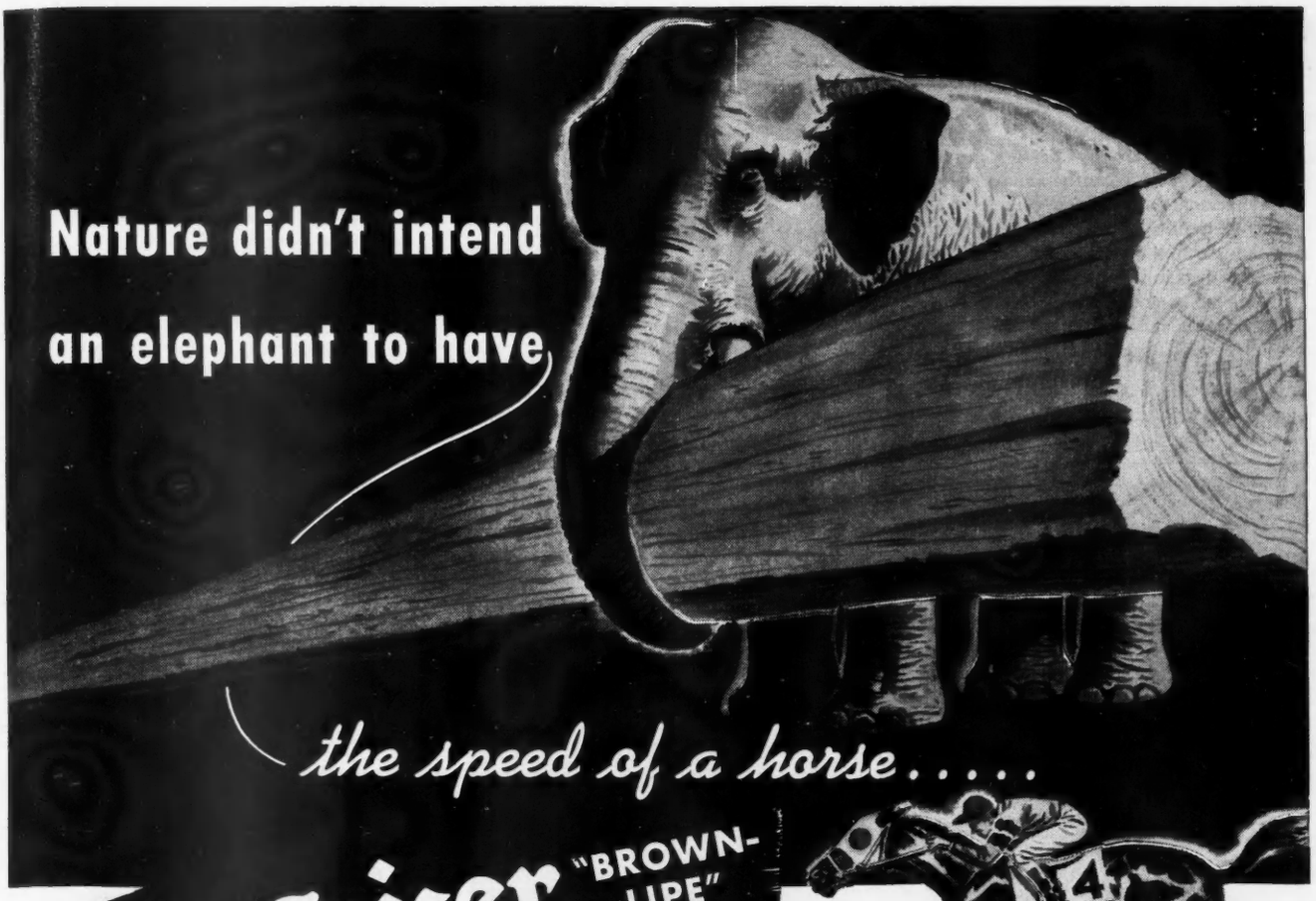
Other officers named were:

William Pointer, president of the Collinsville Transfer Co., Collinsville, Ill., first vice-president; Walter Mullady, president of Decatur Cartage Co., Chicago, second vice-president; Barney Cushman, president of Cushman Motor Delivery, Chicago, secretary; and C. John Viking, president of Webber Cartage Co., Waukegan, treasurer.

Government Uses Tucker Plant

First steps in establishment of a Federal Center in Chicago in the Government-

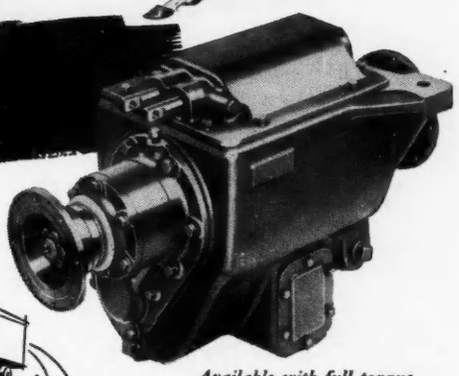
(TURN TO PAGE 132, PLEASE)



Nature didn't intend an elephant to have

the speed of a horse.....

but the Spicer "BROWN-LIPE" AUXILIARY TRANSMISSION gives you all the advantages of both

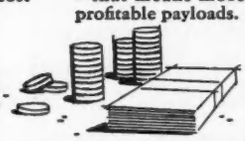


Available with full torque top mounted power take-off.

FASTER TRIPS. Overdrive gears *increase* truck speed while *reducing* engine revolutions. More miles per truck hour, with lower fixed charges per trip. Lower driver cost per trip. Less overtime.

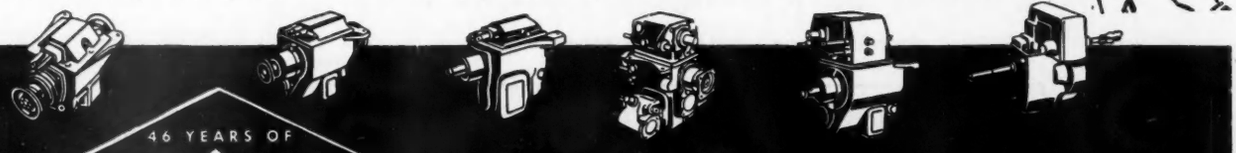
● **MORE POWER.** With a Spicer Brown-Lipe 3-speed Auxiliary, you get from 26% to 111% *more pulling power* in underdrive gears! And you will average 10% more horsepower after each shift! Your truck can handle heavier loads easier—that means more profitable payloads.

REDUCE COSTS. Every unit—motor, clutch, transmission, drive shaft, axle, brakes, tires—operates with less strain. Destructive lugging and overspeeding of engines practically eliminated.



PROFITS GEARED UP. Less down time; fewer repairs; reduced gas, oil and tire bills; more consistent and bigger payload income—all these are assured by a Spicer Brown-Lipe 3-speed Auxiliary Transmission.

There is a Spicer Brown-Lipe Auxiliary Transmission to exactly meet your needs—Spicer Engineers will help you reduce your cost per ton mile



46 YEARS OF Spicer SERVICE

SPICER MANUFACTURING • *Division of Dana Corporation*

TOLEDO 1, OHIO

TRANSMISSIONS
TORQUE CONVERTERS

PASSENGER CAR AXLES • CLUTCHES • PARISH FRAMES • STAMPINGS • FORGINGS
UNIVERSAL JOINTS • SPICER "BROWN-LIPE" GEAR BOXES • RAILWAY GENERATOR DRIVES

CCJ News Reports

Continued from Page 130

owned 480-acre Dodge-Chrysler aircraft engine plant was recently announced.

Arrangements have been completed for moving activities of two Federal agencies into the northern side of the former war plant about January 1, 1951.

Additional space remains available for other Government occupancy or for commercial uses. The foundry and forge areas of the plant will still be available for sale or lease for manufacturing purposes.

The Dodge-Chrysler plant after World War II, was leased to the Tucker Corp. for manufacture of the Tucker automobile, but reverted to the General Services Administration on December 3, 1949, when the Corp.'s lease with option to buy expired. GSA tried to sell or lease the plant again in May, but rejected all proffered bids as inadequate.

Bonney Names Winners in Contest

Arthur P. Grossman, a fleet mechanic with Puritan Laundry, Omaha, Neb., took the grand prize of $1000 in the recent mechanic's contest sponsored by Bonney Forge & Tool Works of Allentown, Pa. Other top cash winners included Donald W. Smith of Mattoon, Ill.; John C. Bukawaski of Shenandoah, Pa.; John J. Quirk of Bangor, Me.; Winston D. Helms of San Antonio, Texas; Clarence T. Allen of Atlanta, Ga., and Gilbert D. Son of Princeton, Ky.

In addition there were 100 purchase certificate awards, 400 Zenel wrench sets winners and 1000 Bonney tie clasp winners making a total of 1507 awards.

Industrial Notes

A seven-battery merchandising rack with built-in charge preserver now is being offered to **Willard Storage Battery Co.** dealers.

The DeVilbiss Co., manufacturers of air compressor outfits and spray painting equipment, will soon establish a modern manufacturing plant in Somerset, Pa., it was announced at the company's general offices in Toledo, Ohio.

Thermoid Co. has acquired the largest number of new distributors for the products of the Automotive Div. in the first four months of 1950 that the company has ever secured in any similar period in its history.

Gar Wood Industries, Inc., announced recently the purchase of the **National Truck Equipment Co.,** Waukesha, Wis. This property will be owned and operated by a newly formed and wholly owned subsidiary of Gar Wood, to be known as the **National Lift Co.**

Expanded facilities for serving trucking, mining, petroleum, and industrial needs in Central Illinois and part of Iowa are being made available by **Cummins Diesel Sales Corp.** of Illinois at a new branch location in Peoria, Ill.

Manufacturing activities of **American Magnesium Corp.,** the magnesium fabricating subsidiary of **Aluminum Co. of America,** were assumed by ALCOA, and American Magnesium Corp. will become inactive.

A new name, **Ideal Corp.,** became effective June 1 for the **Ideal Mfg. Co., Inc.,** Brooklyn, N. Y.

Craig Heads Highway Sales

Unfortunately L. E. "Ted" Craig's past overshadowed his present in our June issue. His new appointment is as general manager of sales for Highway Trailer Co., not the Trailmobile Co. as reported. Other recent Highway Trailer Co. appointments include:

...H. E. Stvinbrink, Eastern regional manager; R. E. Orwick, Western regional manager; Otto Walter, special representative; and branch managers, J. P. Kalivoda, Philadelphia; A. V. Nelson, Pittsburgh; Ray Rowitzer, Newark, N. J.; and Erling Holdahl, Des Moines, Iowa.

END

Please resume your reading on P. 31

SAVES time, money, manpower & floorspace

"The Drum Safety Jack is the slickest thing we've seen in our 31 years of operation," reports Austgen Express and Storage Company of Chicago Heights. "We save one man on most wheel removal jobs. We can use the Drum Jack out in the yard or on the road. Most important, our mechanics are not exposed to the hazard of crawling under trucks or trailers."

GET FULL DETAILS—MAIL COUPON TODAY

DRUM JACK CORPORATION
Subsidiary of The Cleveland Pneumatic Tool Company
3769 EAST 77th STREET • CLEVELAND 5, OHIO, U.S.A.
We would like to know more about the DRUM *Safety* JACK.

Company .....

Address ..... *City* .....

Controlling Valve Wear

Continued from Page 70

structure, and others, unfortunately, have gotten into the wear problem by making such a change. Distortion creates wear by causing the valve to contact only a small portion of the cylinder seat when contact is first made at seating. The valve then either slides or is forced by cylinder pressure into full contact provided, of course, the seat is still round. This small movement at high pressure is the start of fretting or roughening of the valve or seat. It is aggravated by poor valve motion and bad mechanical conditions which allow misalignment. A change of seat angle may give relief; for example, if distortion is lateral, a 15 deg seat angle valve would be unseated much less than a 45 deg valve.

The use of a different material combination has to date been the most positive means of reducing wear. Its effectiveness has not been 100 per cent and what works in one engine may not work in another. The choice of materials is limited to cast iron for the seat, unless the manufacturer resorts to the use of a seat insert, and the valve materials. Considerable testing is involved in choosing the right combination and the medicine may be bitter from the standpoint of cost.

Some valves have shown reduced wear of the valve face or cylinder seat face when allowed to rotate; others have shown more wear. Rotation should be noted in conjunction with this problem and, if beneficial, incorporated.

The use of coatings on the face of the valve or cylinder head seat remains to be exploited. I refer to such things as tinning which is done sometimes on other engine parts to eliminate scuffing.

Hardening of the cylinder head iron has shown benefit, but high valve hardness has not been very effective since the greater amount of wear is usually on the cylinder head, particularly if no insert is used.

The direct application of stellite on the cylinder head is sometimes a salvage measure and often improves life.

Valve Face Guttering

VALVE face guttering, on the other hand, has been primarily an exhaust valve problem. It might be considered as having two phases; one being the result of distortion which allows leakage to occur in one local area, or as a result of bad mechanical conditions; and the other phase being the leakage which results when deposits which have formed between the valve and seat break away. Gasoline engines have long been subjected to the formation of deposits but the problem is relatively new for diesel engines. What the future holds cannot be predicted, but indications are that lubricating oils containing high quantities of additives will increase the amount of deposit formation on diesel engine valves and thereby aggravate the problem of seat leakage. Additives in the fuel could further complicate the picture. Improving life under both of these conditions which cause leakage can be based on experience gained in improving life in gasoline engines.

Experience on a few tests with high ash oils indicates that guttering on valves and seats of both inlet and exhaust can be caused when small areas of deposits break off. The guttering is straight high temperature oxidation and not corrosion. Diesel engineers use ex-

(TURN TO PAGE 134, PLEASE)

Vari-Speed
HANDY GOVERNOR
Characteristics and Advantages
1 Wide range of governed speeds without the necessity of any change in governor assembly.
2 Controlled light load speeds.
3 Sharp governor cut-off—minimum horsepower loss.
4 Low speed droop.
5 Final full load and no load factory calibration on air flow machine assures you accuracy and uniformity in production.
6 Simple to adjust.
7 Simple mechanical design—only one moving shaft.
8 Sturdy corrosion-free construction.
9 Stainless steel needle bearings that insure instant response.
PROTECTION HANDY
NO OTHER VELOCITY GOVERNOR CAN GIVE YOU ALL THESE ADVANTAGES
KING-SEELEY CORPORATION
ANN ARBOR MICHIGAN
PLANTS IN ANN ARBOR GRAND RAPIDS YPSILANTI

Controlling Valve Wear

Continued from Page 133

haust gas temperature as an indicator but do not realize that high-pressure, high-temperature leakage can create 500 deg valve temperatures without affecting exhaust gas temperature which might be as low as 800 deg. Thirty to 50 hr of full output running (with a narrow leakage area) can cause bad guttering on valve steels, whereas upwards of 250 hr are required with a hard facing under the same conditions.

Guttered valves, even when hard faced, are possible with present fuels and lubricants indicating that a close watch on temperatures is required. One valve returned to us for comment had a bright shiny appearance at the seat contact with a couple of guttered areas, but after electrolytic cleaning the gutters were no longer present. The steel showed practically no effect of the leakages and the deposit which formed the seating surface was entirely gone.

Here, again, rotation has proved of benefit in keeping temperatures, deposits, and leakage under control. The use of rotators in diesel engines is relatively new but the gains in valve life may well justify the expense of incorporating a device which will allow valve rotation.

Stem and Guide Wear

THE problem of stem and guide wear is essentially no different than other problems of engine wear. It is a function of three things: (1) materials and hardnesses, (2) load, and (3) lubrication.

The use of special materials, heat treatments, coatings, etc., has shown some merit and several manufacturers are using valve guides which have been ferroxed or parco-lubrized with a degree of success. Size and surface finish are also important and proper valve train geometry must not be overlooked.

The most effective element in freedom from wear is adequate lubrication, assuming that the aforementioned factors are given recognition. Past experience has indicated that nearly any material combination will be successful, since the loads are light, if given a reasonable amount of lubrication; but very few materials will operate satisfactorily in a dry state. The problem becomes one of maintaining satisfactory lubrication on both exhaust and inlet valves without over-lubricating the inlet valve, and thereby increasing oil consumption or under-lubricating exhaust valves as a result of scanty oil supply or deposits. The use of an oil seal ring on the inlet valves coupled with close stem to guide clearance may effectively satisfy the inlet valve requirement, and an ample oil supply on the exhaust with the minimum possible stem to guide clearance for effective control and improved heat transfer may be the most satisfactory. Excessive stem to guide clearances hamper the transfer of heat from the valve to the cooling medium and allow room for deposits to form which reduce the effectiveness of lubrication.

Sticking

THE problem of sticking has been placed at the end of the list since it might be classed more as a nuisance problem on diesel engines. Sticking results from building up of deposits on the valve stem causing it to be sluggish in the guide or, in some cases, causing it to actually become wedged to the point of not operating. If the valve sticks in an open position it may be struck by the piston resulting in engine damage. At this point it is more than a nuisance.

(TURN TO PAGE 136, PLEASE)

STEAM-GUN CLEANING

your best bet for speeding up maintenance . . . free guide tells how!

If you want to find out how much time and money you can save on fleet maintenance—send for this free cleaning guide!

It describes the four different models of Oakite Steam-Detergent Guns. Explains how, with any one of these guns, you can bring into play heat plus pressure to boost the degreasing power of your detergent. Tells how you can expedite degreasing of disassembled parts, blocks. How you can reduce cleaning time 50% on chassis, engines-in-place, louvres, floors, pits. How you can strip body paint quicker than ever before . . . more economically, too!

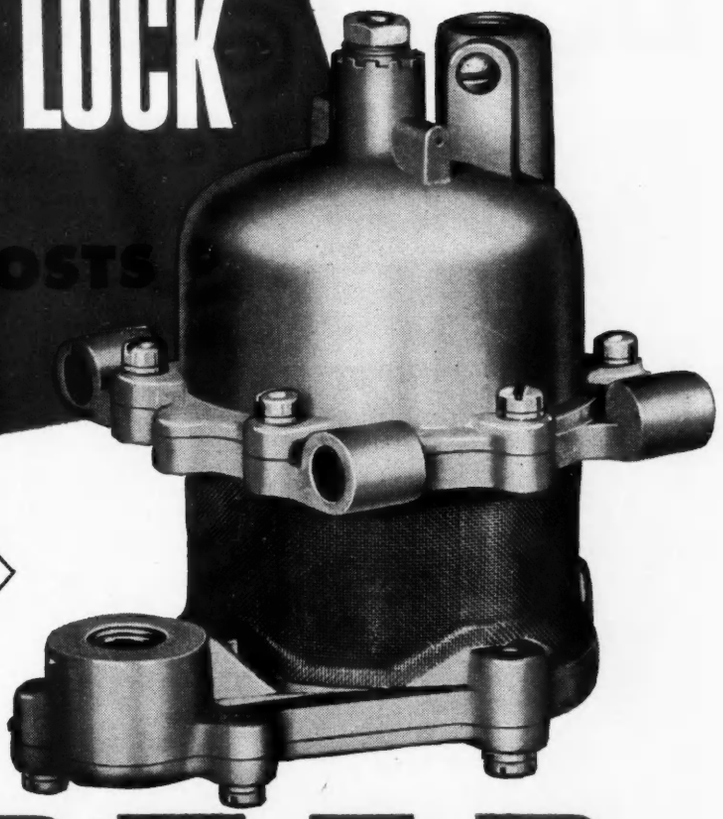
Send for this interesting guide! Or if you'd like to see Oakite Steam-Detergent Cleaning in action—right in your own shop—ask for demonstration. There's no cost . . . no obligation. Drop us a line today! Oakite Products Inc., 26D Thames Street, New York 6, N. Y.

Technical Service Representatives in Principal Cities of U. S. & Canada

OAKITE SPECIALIZED INDUSTRIAL CLEANING MATERIALS • METHODS • SERVICE

STOP VAPOR LOCK

CUT
MAINTENANCE COSTS
REDUCE
ROAD FAILURES



CARTER

ELECTRIC PUSHER PUMP

Used as standard equipment on most leading gasoline powered buses and on thousands of trucks throughout the country, the Carter Electric Pusher Pump has a *proven record* of superior performance under rugged operating conditions.

Conversion Kits are available. It will pay you to investigate the possibilities of converting now.

CARBURETER

CARTER CARBURETOR CORPORATION
ST. LOUIS 7, MO.

Division of American Car and Foundry Company

731

LIFT THE GIANTS

...with New Zip and Ease!

Fastest seller in its class . . . because it's the only MODERN extra-heavy-duty Jack!

Here's the Jack that's *different* from all others which aim to handle extra-heavy-duty vehicles. *This* super-lift has a top saddle height of 24¼" — *to eliminate blocking.* It is surprisingly easy to maneuver . . . because the one-piece malleable side plates are shaped to create strength *without the handicap of excessive bulk and weight.* And its 7½ tons of authentically-rated power *safely and easily* raise wheel loads of ALL trucks, buses and trailers permitted on the highway. Order an S-15 from your jobber. Put new speed in your shop!

MODEL S-15

7½-Tons

of authentically-rated power

Only $190

[Price subject to change without notice]

- Manual effort is reduced by the "Feather Touch" principle.
- Jacking action is *fast,* because of "Lightning Lift."
- The LONG handle makes for easy load-spotting.
- Only 324 lbs. of weight! All controls are at the handle top.

BLACKHAWK®

A product of BLACKHAWK MFG. CO., Dept. J-1170, Milwaukee 1, Wis.

Controlling Valve Wear

Continued from Page 134

The problem may be approached from two directions; first, do not provide any space for deposits to form, that is, keep stem and guide clearances to a minimum. Any spaces that are available for deposits to form should be as wide as possible so that these deposits can reach their maximum normal thickness without obstructing the movement of the valve. An example is the use of counterbores in the valve guide which, if used, should be large enough to allow the deposits to build up and break off before they will wedge.

Better still, to reduce the guide length so that the point of first contact between the valve and guide occurs where the temperature is low enough not to cause breakdown of the oil to form deposits.

The use of oils which have reduced deposit tendencies is recommended, but the most effective elimination of valve stem sticking is the use of a device which allows the valve to rotate.

The use of solvents on valve stems to remove gummy formations has been tried successfully by some engine builders. One had a passage leading through the valve guide and cylinder head to the outer deck next to the valve spring and periodically a solvent was forced into this passage. Subsequent use of a release type rotator showed such benefit that it was adopted in production.

END

Please resume your reading on P. 71

Autocar Awards Hero

Wayne Simpson (right), a driver for the Los Angeles Brewing Co., presented with the Autocar Co.'s Highway Hero Award for stopping a runaway truck. R. H. Clarke (left), Autocar's district manager in Los Angeles, holds silver medal and Charles J. Lick, vice-president and general manager of the brewing company, holds scroll which were given Simpson

STAINLESS STEEL CONSTRUCTION adds a ton of payload every trip

Note these savings in weight reported by a prominent trailer manufacturer for his particular dry-freight trailers

	STAINLESS STEEL (pounds)	STANDARD (pounds)	WEIGHT SAVED (pounds)
SINGLE AXLE			
28-foot	6,205	8,105	1,900
30-foot	6,430	8,390	1,960
33-foot	6,665	8,675	2,010
TANDEM AXLE			
30-foot	8,690	11,060	2,370
33-foot	8,990	11,435	2,445
35-foot	9,180	11,690	2,510

AS the table shows, a Stainless Steel trailer leaves approximately a ton of dead weight behind every time it leaves the loading dock. In place of this dead weight goes an extra ton of payload.

Multiply this added ton of payload by the trips per year . . . then apply your average rate per ton. You'll find the extra income more than offsets the extra cost of this superior type of trailer construction.

But there's more than just extra income to the Stainless profit story. Savings in maintenance go hand-in-hand with fewer days off the road for repair. And because Stainless Steel trailers never need painting, there are extra savings in that line.

Best of all, Stainless Steel trailers *keep* bringing in these extra profits, year after year. Their exceptional corrosion resistance, combined with great structural durability, keeps them on the job for hundreds of thousands of miles.

When you apply the advantages of Stainless Steel construction to your equipment, insist that your trailer manufacturer use U·S·S Stainless Steel. It's a perfected, service-tested material, available in a wide variety of forms, grades and finishes. For the finest performance from your lightweight trailers, specify U·S·S Stainless Steel.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

O-1185

UNITED STATES STEEL

Driver Retraining Cuts Accidents

Continued from Page 76

to train, and may possess such weaknesses as undesirable attitudes, lack of certain driver skills, and undesirable driving habits. These men definitely require more training and attention than the average driver to do the same job. These men also have difficulty in retaining instruction, and require periodical refresher training. Many fleet owners are inclined to slight this group, and many times apply more emphasis to penalties and discharges than to retraining methods.

Certain large and small fleets have proved that specialized retraining methods can almost entirely change and correct the average accident repeater, although it may require from one to three return trips to the safety school or clinic.

3. The third group includes the older, more experienced, long-service operators who are in need of periodical refresher training. These drivers often feel over-confident and some may even believe that accidents can no longer occur to them. In some cases, these drivers have forgotten, through disuse, certain important safety rules and regulations. This group usually is the most highly skilled of all drivers and are usually quite proud of their past safe driving records. Some may even possess undesirable attitudes, but can become the most ardent safety fans if given an opportunity to attend safety meetings and refresher courses.

Training Must Be Specialized

RETRAINING through refresher courses must be a specialized and repeating process. A few most important safety violations and accident patterns should be brought before the students several times during the course of the training; at which time the safe and correct substitutes must be offered and sold to those present.

The human laws of use and disuse should be emphasized at this point to bring about the corrections. We know that safety lessons must be emphasized over and over, using as many different methods as possible to be effective.

Some very effective examples are safety films of their own company drivers, emphasizing the correct and incorrect methods of driving company equipment. Actual demonstrations inside the bus, truck or trolley also can be used, plus review of such safe and unsafe practices by lecture methods. This, of course, should be done after the actual demonstrations have been made with the drivers on the vehicle.

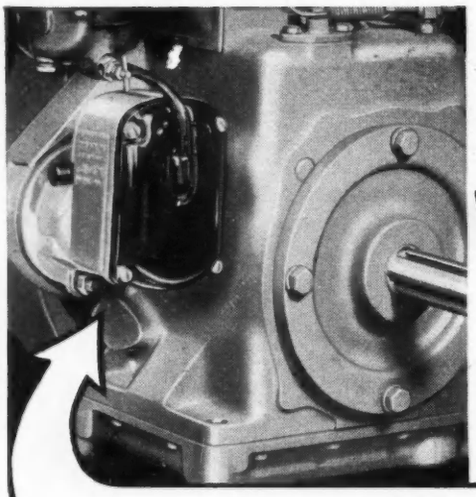
The curriculum for such retraining courses must be determined by a thorough study of past accident patterns and experiences of individual drivers within the fleet. It is also important in conjunction with such a program that a prompt and efficient accident reporting and recording system be in effect, combined with National Safety Council basic rules for determining accident contribution and responsibility.

Program Cuts Accidents 46%

A CERTAIN large commercial fleet gave great credit to a specialized training and retraining program which brought about a 46 per cent reduction of driver accidents in a period of 28 months. Certain other transportation companies have been known to reduce their accidents as much as 50 per cent by such specialized programs.

Let us assume that the transportation company mentioned above was the

(TURN TO PAGE 140, PLEASE)

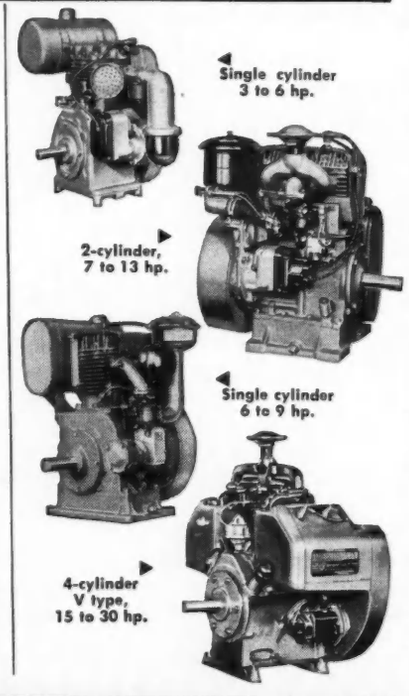


Why WISCONSIN HEAVY-DUTY Air-Cooled ENGINES have a Rotary-Type OUTSIDE Magneto

Wisconsin engineers have found through long experience and experimentation that the best place to put the magneto, not only for convenient accessibility but for better ignition performance over an extended period of time is on the OUTSIDE . . . with an independent, direct drive from the engine to the Magneto. The Rotary Type high tension magnetos used on Wisconsin Air-Cooled Engines provide the greatest protection against ignition troubles because the Magneto itself is a complete, independent operating unit that doesn't rely on an unrelated part of the engine for its successful operation. It's tightly sealed against dust and moisture, of course, so it isn't affected by wet weather and there is no chance of it getting "fouled up". And it's equipped with an Impulse Coupling that provides a quick, hot spark for easy starting in any weather, in any climate — *a feature that can't be incorporated in a flywheel-type magneto.*

Yes, the MAGNETO *is important* . . . both as to type and placing on the engine. It's the right kind and in the right place on Wisconsin Heavy-Duty Air-Cooled Engines.

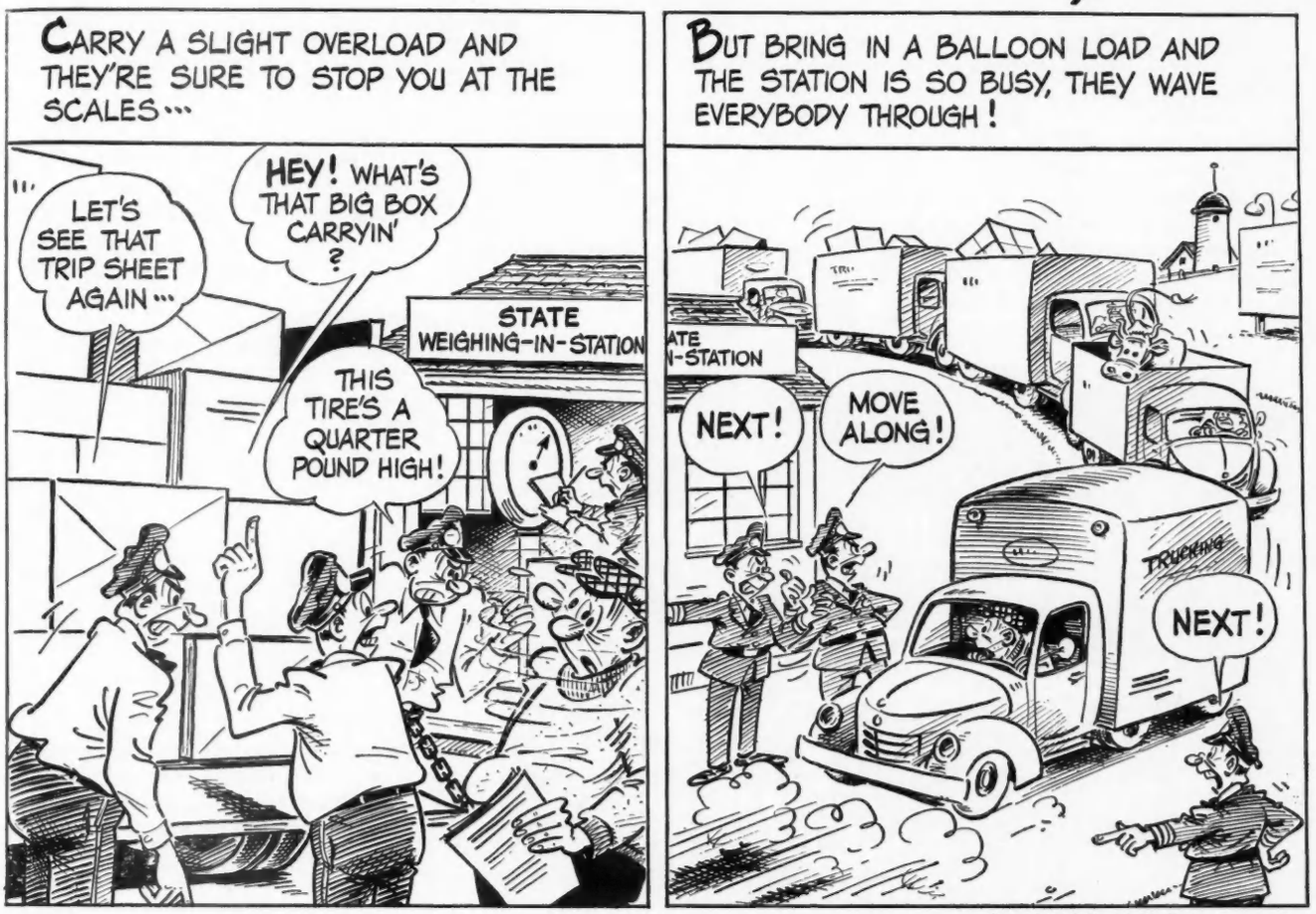
Highly efficient, dependable AIR-COOLING at all temperatures from sub-zero to tropical highs, plus heavy-duty construction, light weight and compactness are other important advantages that apply to all Wisconsin Engines . . . 4-cycle single cylinder, 2-cylinder and V-type 4-cylinder types and models, 3 to 30 hp. — ideal power for refrigeration and air-conditioning truck units.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

"THEY NEVER MISS ..!"

by Gum


CARRY A SLIGHT OVERLOAD AND THEY'RE SURE TO STOP YOU AT THE SCALES...
LET'S SEE THAT TRIP SHEET AGAIN...
HEY! WHAT'S THAT BIG BOX CARRYIN' ?
STATE WEIGHING-IN-STATION
THIS TIRE'S A QUARTER POUND HIGH!
BUT BRING IN A BALLOON LOAD AND THE STATION IS SO BUSY, THEY WAVE EVERYBODY THROUGH!
NEXT!
MOVE ALONG!
TRUCKING
NEXT!

Copyright 1950, Prest-O-Lite Battery Company, Inc.

Hi-level keeps 'em rolling

Look how you benefit . . .

- ★ **70% LONGER AVERAGE LIFE**—in tests conducted according to S.A.E. Life Cycle Standards.
- ★ **LESS SERVICING**—reduces time and bother of servicing and checking batteries.
- ★ **GREATER LIQUID RESERVE**—needs water only ⅓ as often as batteries without the Hi-Level feature.
- ★ **FIBRE-GLASS MATS**—help prevent "shedding"—one of the major causes of battery failure.

Find how Hi-Level can help end battery grief, cut costs for you. See your Prest-O-Lite distributor for complete information or write to

PREST-O-LITE BATTERY COMPANY, INC.
Toledo 1 **Ohio**

Investigate the Prest-o-lite hi-level Battery

prest-o-lite
hi-level battery

. . . needs water only ⅓ as often !*

*As batteries without the Hi-Level features.

Driver Retraining Cuts Accidents

Continued from Page 138

A. B. C. fleet, which discovered the following facts after an exhaustive study of past accident records of their own fleet drivers:

1. The company employed 2500 commercial vehicle drivers.

2. The study showed that 500 drivers of the total fleet driving personnel were definite repeaters who were involved in 48 per cent of all fleet accidents during the year 1947.

3. This company also employed 200 new drivers during the year 1947 which were involved in 30 per cent of the total yearly accident numbers.

4. The remaining 1800 of the older reliable and experienced drivers during the same year were involved in the remaining 22 per cent of the total accident numbers.

A further study and analysis of this condition showed that 75 per cent of the accidents involving the 500 repeaters were of the preventable nature, and showed some degree of contribution. Such was an indication that the repeaters were lacking in driver skill, general safety knowledge and also possessed improper attitudes.

Fifty per cent of the accidents of the 200 new operators were of the preventable nature. This group of younger drivers were found to be lacking in driving skill and general safety knowledge.

Only 25 per cent of the accidents of the 1800 older reliable operators showed some degree of accident contribution. The weaknesses found among these drivers were signs of over-confidence concerning their driving ability, a general need for safety refresher training, and a small percentage of undesirable attitudes.

This study of the general accident pattern was enough to convince the A. B. C. Company that there was an urgent need for a specialized training and refresher program.

Accident Hearings Organized

THE first step facing this company was to organize hearings in each division. All drivers involved in accidents of questionable contribution appeared each week before members of the union, management and the safety department, at which time the accident was thoroughly explained, discussed and analyzed as to contribution in accordance with National Safety Council rules. No driver was permitted to leave the hearing group without first being told whether the accident was of pre-

(TURN TO PAGE 142, PLEASE)

YOU NEED THIS
CARBURETOR PROTECTION
PULSATING FLOW FROM FUEL PUMP
SMOOTH EVEN FLOW TO CARBURETOR
AIRTEX anti-pulsation
FUEL FILTERS
with the SHOCK ABSORBER DIAPHRAGM
• Protects carburetor needle valve and float lever against wear
• Makes frequent carburetor adjustments unnecessary
• Reduces repeated replacement of filter element
• Gives smoother operation at idle and low speeds
• Improves cold weather starting
Better — 6 WAYS
Special Vented Seal Cover
Patented spring cushioned diaphragm
Special alloy non-warp body casting
Porous metal filtering disc removes tiniest particles
Perfect-seal re-usable cork and synthetic rubber gasket
Larger Sediment receptacle
Manufactured and Guaranteed By the Makers of
AIRTEX FUEL PUMPS
With the 50,000-Mile Diaphragm
AIRTEX
AUTOMOTIVE DIVISION
World's Largest Independent Fuel Pump Manufacturer
FAIRFIELD, ILL.
Get It From Your Jobber

Driver-Shop Co-op

Driver Harold Basher and Len Binns, tire supervisor of Boss Linco Lines, worked out plan to obtain maximum tire life out of set of tires which had just reached 84,630 miles. Tires accumulated total of 120,115 miles before recap as a result. A $25 savings bond was awarded to each for their cooperative spirit

KEEPING UP WITH AMERICA'S THIRST IS A BIG JOB!

Every day, thousands of busy trucks scurry between bottling plants and retail outlets . . . delivering full bottles . . . returning empties. There's no time for unnecessary breakdowns and repairs. Bottlers know the importance of superior lubrication and sound maintenance.

Fleet owners—from coast to coast—count on WOLF'S HEAD for both!

WOLF'S HEAD MOTOR OIL—100% PURE PENNSYLVANIA, "PREMIUM GRADE"— is refined three steps further than ordinary oil. It's richer, tougher, "oilier"—free from impurities that cause sludge and undue engine wear.

WOLF'S HEAD HEAVY DUTY MOTOR OIL—100% PURE PENNSYLVANIA—skillfully fortified with scientifically selected additives to assure strong, tough film—excellent detergency—unexcelled dispersancy—maximum resistance to oxidation—superior stability.

WOLF'S HEAD LABORATORY CONTROL SERVICE PLAN— available to all fleet owners, large and small, at no cost—helps establish correct drain periods, sound maintenance practices, efficient operating schedules.

THE WOLF'S HEAD PLAN— sound maintenance practices plus superior lubrication reduces down-time, operating costs . . . increases the useful life of fleets.

Free!... WOLF'S HEAD Rules-of-the-Road Folder. Contains speed laws, driving regulations, highway map, safety hints for *all* states. Give them to your drivers. Write for your copies today.

Wolf's Head Oil Refining Co., Inc., Oil City, Pa., New York 10, N.Y.

WOLF'S HEAD

MOTOR OIL AND LUBES

100% Pure Pennsylvania "Premium Grade"

Member, Penna. Grade Crude Oil Association

Driver Retraining Cuts Accidents

Continued from Page 140

ventable or of non-preventable nature. If it were an accident of the preventable nature, the driver was to be further instructed and shown how to prevent the same from re-occurring in the future.

At this point, an agreement was reached between the company and the union stating that in the future, all drivers who were involved in more than one preventable accident within a six-month period would be returned to a specialized safety school for refresher training. It also was agreed that all new drivers were to be brought in to the school before final approval could be given by management. Such new operators also were to return to the school after their first six months of service.

The older reliable drivers with good records also were to spend at least one day in the school each year.

Training Based on Causes

THE training program was, therefore, outlined by following causes of the most numerous, serious and costly types of accident patterns found on each driver's record card over the previous two-year period.

The purpose of the program was to offer specialized training and to seek out weaknesses, retrain and correct faulty driving habits by offering safety substitutes. Such an objective is based on the old theory that no driver wants to have an accident, but has them because of weaknesses, not known to himself. It then becomes the job of the safety department to locate the trouble and apply the correction.

An important fact to keep in mind is not to confuse the retraining program with the general training routine for all new driver employees. The retraining program, as mentioned, is usually more thorough and specialized. It must be geared to magnify the usual driving mistakes, and offer solid convincing substitutes that can be backed up by actual demonstrated proof.

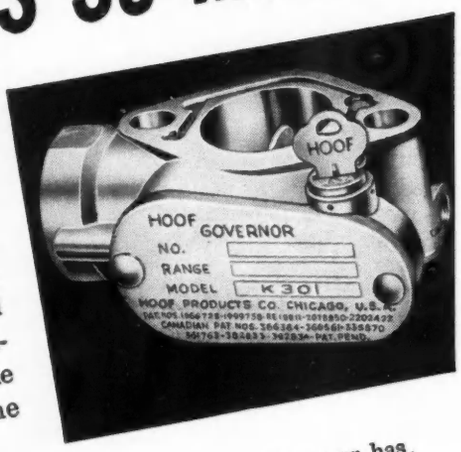
The retraining program has proved to be an excellent plan for all drivers, but it is a natural for the accident repeater. It is not a hit or miss affair and, if combined with good selection and the usual early training, cannot fail to reduce accidents at a rapid rate among fleets that now have average safety programs.

END

Please resume your reading on P. 78

NO OTHER SINGLE ITEM COSTS SO LITTLE AND SAVES SO MUCH!

Most Hoof Governors cost no more than a couple of tanks of gas! Yet Fleet records show savings of from 20% to 50% on tires, brakes, clutches, rear ends, motor re-building and other maintenance expense! Want to see some proof? Write us for the full Hoof Story!



No other Governor has Hoof's patented Cantilever Spring that means more accurate speed control, simplified construction and longer life!

HOOF PRODUCTS CO.
6543 S. Laramie Ave.
Chicago 38, Ill.

HOOF key and seal type GOVERNORS

Wisconsin Assails Regulation

The Wisconsin Legislative Committee investigating highway problems has heard testimony that truck manufacturers find it impossible to standardize designs, carriers cannot operate their vehicles with the most efficient loads, and the nation's bill for highway transportation service is unnecessarily high because of the confusing complexity and contradiction of size and weight limits for commercial vehicles. Several witnesses insisted that standard size and weight limits such as those recommended by the American Association of State Highway Officials would be a boon to the transport industry and its affiliates. Karl M. Richards of the Automobile Manufacturers Association suggested that a research project now under way by the Highway Research Board, in cooperation with other organizations, will point to desirable standards that can be applied throughout the nation. He recommended "cessation of loose talk" about new regulations for the motor truck industry until factual data on design and weight needs are definitely known.

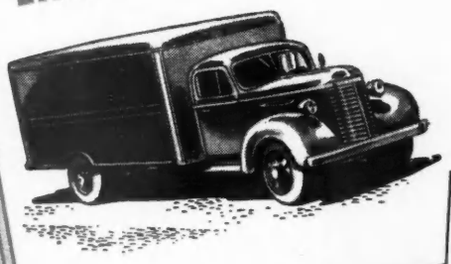
Here's Positive Proof of how you can

CUT "DOWN TIME"

...with Transportation's Finest Piston Rings!

FLEET #163

GETS 200-500% MORE TIME BETWEEN ENGINE OVERHAULS—SAVES ENGINE BLOCKS!



AN EXPRESS COMPANY, OPERATING IN A LARGE EASTERN CITY, REPORTS:

"With all of our engines, it was previously necessary to rering them at the end of one to two months of service because of wear resulting from severe operating conditions. In many cases, it was necessary to rebore the engines.

With **KOPPERS PISTON RINGS,** we find that we are getting four to five months of service out of our engines and, almost invariably, the engines can be reringed without reboring because of the reduction of cylinder wear."

KOPPERS *K-SPUN*

STOPS PISTON RING BREAKAGE

because:

1. *It is twice as strong as conventional piston ring materials*
2. *It has 50% more spring*
3. *It has four times greater resistance to combustion shock*
4. *It has much greater resistance to wear*

KOPPERS POROUS CHROME*

REDUCES CYLINDER WEAR

because:

1. It seats faster. The porosity of the chrome causes almost instantaneous seating to make a perfect seal that eliminates blow-by
2. Chrome finish resists the penetration of abrasive material, (which normally wears cylinders by entering the engine and imbedding itself in the surface of ordinary rings.) Result: Porous chrome reduces cylinder and ring wear 1/3 to 1/4 of normal

GREATLY REDUCES OIL COSTS by maintaining minimum oil consumption for longer period of time

INCREASES GASOLINE MILEAGE by reducing friction, adding power, which maintains economy longer

AMERICAN HAMMERED

KOPPERS

k-Spun

POROUS CHROME PISTON RINGS

*VAN DER HORST PROCESS

SEE YOUR KOPPERS *AMERICAN HAMMERED JOBBER* for these amazing Piston Rings—equally effective for rering or rebore jobs.

KOPPERS COMPANY, INC., *Piston Ring Dept.*, Baltimore 3, Md.

SAE Summer Meeting

Continued from Page 69

wear to one tenth of that encountered with some oil wetted types.

(4) The use of an oil filter when properly serviced will reduce the wear on bearings by 50 per cent or more and definitely reduces the wear on the oil rings.

(5) The "pull-over" of oil bath carburetor air cleaners is very serious and may reduce life by several times.

(6) The increase in the efficiency of a carburetor air cleaner from 98 per cent to 99 per cent reduces wear by about one half.

(7) The use of chrome plated top rings will double the time the engine can be run until excessive blow-by occurs.

(8) The use of chrome plated top rings will reduce the bore wear by about 75 per cent.

(9) The use of chrome plated top rings may not reduce the wear of the lower plain rings.

(10) Increasing the thickness of the chrome plate on the top ring increases the ring life but not in the same proportion.

Any operating condition causing slippage between tire and road will cause wear, said G. M. Sprowls, of Goodyear Tire & Rubber Co., in a paper on this subject. He listed such conditions as topography, road surfaces, acceleration and deceleration, loads and speeds as contributing to tire wear, and showed the importance of tire mating, proper pressures, wide base rims in improving mileages. Commenting on cold rubber, Mr. Sprowls said that there has not been much application of this development to truck and bus casings due to the effect it has on heat generation. Since heat is a more critical factor in heavy-duty tires, it is assumed that cracking would be much worse in truck and bus tires. The resistance to abrasion of cold rubber tires is about 25 per cent better than synthetic rubber, he stated, but its resiliancy is only slightly above GRS and below that of natural rubber.

Discussing means of improving tire mileage, the speaker recommended better inspections for the truck field. Buses experience only about one fourth as many cuts and carcass failures as trucks which travel over the same roads, he said, with indications that truck tires are damaged by foreign objects picked up at terminals and loading docks. He recommended a clean up of such danger points in a move to up tire mileages.

A. H. Deimel, of Spicer Mfg. Co., in a paper on automatic transmissions forecast a trend toward providing automatic regulation of throttle position, speed and torque ratio to take the place of present-day developments. This will provide new fuel economies and improved performance with internal combustion engines which perform better under lower speeds and wider throttle opening, he said. He predicted that the trend toward employment of hydrokinetic drive would continue, with throttle position and speed and torque ratio eventually subjected to automatic regulation. Hydrostatic transmissions permit performance of this type, but their high losses in size suitable for automotive application have prevented their application, he stated. To produce this type of performance with a torque converter, some form of external control on the flow must be made available. Mr. Deimel also reviewed principles of operation of existing transmissions, showing design and construction features with slides.

(TURN TO PAGE 148, PLEASE)

NEW SPECIFICATIONS

Yankee "920"—the complete 4-lamp set with flasher switch and wiring—is the last word in truck directional signals . . . meets the new S.A.E. specifications for all Class A vehicles, those over 80" in width. New type 4½-inch lamps are finished in black baked enamel over corrosion-resistant "bonderized" steel. The "920" is a money item—cash in on it.

YANKEE METAL PRODUCTS CORP., NORWALK, CONN.

BALL THE JACK WITH GUNITES!

When competition forces your drivers to ball-the-jack over a snaky run in hill country... when they're going down grade at 60 or more in high and fully loaded . . . they have to hit the air almost constantly to keep the rig under control. They don't dare shift down a notch or they'll miss *your* schedule. These are tough, competitive, conditions . . . and they are rough on brake drums. The famous GUNITE Ribbed Brake Drum stands up under these severe conditions. Think how much more GUNITES will cut your cost per mile under normal operating conditions. Write for name of your nearest GUNITE distributor.

YOU SAVE MONEY SAFELY WITH GUNITE BRAKE DRUMS

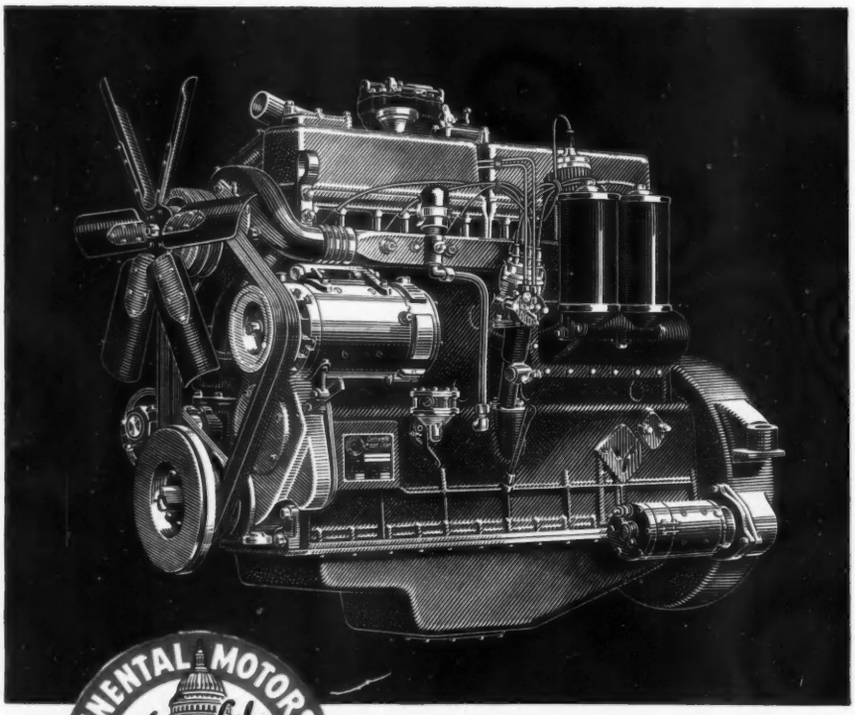
Those big, rugged GUNITE Ribbed Brake Drums give you amazing trouble-free mileage. GUNITE Ribbed Brake Drums prevent breakage and give you more service without checking, fading, or creeping because they are made of GUNITE metal which makes them much stronger and longer lasting than ordinary brake drums. Normal highway stops with heavy loads or frequent stops through cities are all the same to GUNITE Brake Drums.

SPECIFY GUNITE WHEEL ASSEMBLIES ON YOUR NEXT NEW TRUCK OR TRAILER

When you buy new equipment . . . specify GUNITE Wheel Assemblies. GUNITE Cast Electric-Steel Wheels give you the proven strength and rigidity of cast steel with the light weight of GUNITE design. They are equipped with genuine GUNITE Brake Drums made of superior GUNITE metal. Your operating costs will be lower from the start when your equipment rolls on super-safe GUNITE Wheel Assemblies.

GUNITE FOUNDRIES CORPORATION
Rockford • Illinois

THERE'S A RED SEAL ENGINE FOR EVERY TRANSPORTATION JOB



CONTINENTAL MOTORS
Powerful as the Nation
AMERICA'S STANDARD

S-6749 TRANSPORTATION ENGINE

Built for heavy-duty service. 250 h.p. at 2600 r.p.m. Six cylinders, overhead valves. Heat-treated, pressure-tested block and head. Exclusive Continental system of individual porting. Full-length water jackets with directed coolant flow. Tocco-hardened crankshaft journals. Leakproof water pump. Write for Bulletin TS48749.

Continental Motors' line of transportation engines is both diversified and complete. There are 24 different models, with net usable horsepower ranging from 10 to 230. Red Seal built-for-the-job power is available for automobiles—taxicabs—city, school and interurban buses—highway trucks, tractors and street maintenance equipment—fire-fighting apparatus—door-to-door delivery units—industrial trucks of all types—and virtually all other vehicles for highway and off-highway use. Red Seal engines are built in L-head and overhead-valve types, and for use with butane and Diesel fuel as well as gasoline.

Conversion to Continental Red Seal can be made with minimum installation changes. In writing for further details, kindly mention specific application.

Continental Motors Corporation
MUSKEGON, MICHIGAN

SAE Summer Meeting

Continued from Page 144

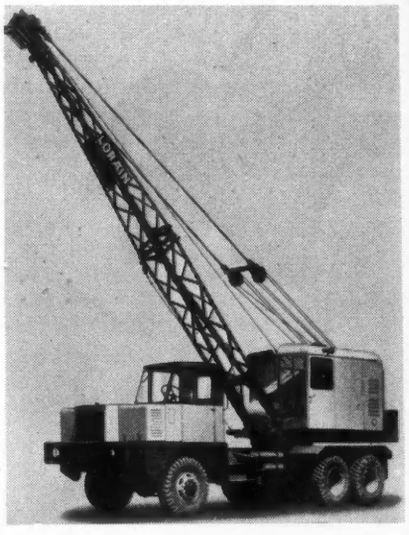
Details and construction features of the Ford-Mercury automatic transmission were revealed in a following paper presented by H. T. Youngren, and H. G. English, of the Ford Motor Co. Neither speaker mentioned use of the torque converter application to commercial vehicles, but an interesting discussion of the subject by T. Backus, of Fuller Mfg. Co. will be found on page 6. Again the reader should be referred to page 78 of this issue for a discription of the new Fuller converter as used on International LB-140 delivery models.

A report on results of highway tests with seven motor trucks operating over two 150-mile routes in Pennsylvania provided some valuable information with regard to operating costs, gasoline consumption, travel time and other important factors. The tests, conducted by the Bureau of Public Roads, will provide engineers, fleetmen and highway officials with basic and reliable information on operating costs as related to the power and weight of commercial vehicles over various highway conditions. For a complete story on this subject see page 74 of the January issue of CCJ.

END

Please resume your reading on P. 70

Two Thew Cranes



One of the two new "Moto-Cranes" with crane boom having maximum possible extension of 130 ft. Manufactured by the Thew Shovel Co. of Lorain, Ohio, the rubber-tired carrier is powered by a 220-hp, 6-cyl engine. The turntable is powered by another separate 6-cyl engine driving through a Twin Disc hydraulic coupling and roller chain drive

D-X Cuts Operating Costs FOR TRUCK FLEET

The Hoxie Fruit Company of Des Moines, Ia., uses D-X Motor Oil with Extrinol for a truck fleet with outstanding results.

"Cleaner motors... only a bare minimum of sludge...reduced complaints from drivers . . . more economical operation." They listed these advantages in a signed statement!

If you operate in the Middle West, D-X with Extrinol can help you cut costs. And, there's a profit-building D-X Preventive Maintenance Plan that will show you how. Mail the coupon today for further information.

MID-CONTINENT PETROLEUM CORPORATION
TULSA, OKLA.

Mid-Continent Petroleum Corporation
Tulsa 2, Okla.

Gentlemen: Please send me a copy of P. M., the D-X Preventive Maintenance Plan that shows me how to cut costs and make more profit from truck fleet operations.

Name_____

Address_____

City_____ State_____

Firm_____

Waterloo, Ia. Terre Haute, Ind. Omaha, Nebr. Chicago, Ill. Minneapolis, Minn.

Fuller Convertor Applied to Light Truck

Continued from Page 78

is stationary and there is a difference in pressure in the fluid in the stator and pump exit. This creates a pressure forcing oil out of the converter through a series of drilled passages in the hub of the stator and into the oil cooler through an annulus and passage in the housing. Oil returns to the converter through another group of passages. During torque multiplication, therefore, there is a continuous circulation of fluid in and out of the converter.

When operating as a fluid coupling there is no demand for oil cooling and actually little or no circulation takes place, under pressure, since the pressure within the converter is balanced when the stator is free-wheeling.

In the arrangement, the self-contained converter unit is attached directly to a special International transmission having an offset output shaft. This is a simple mechanically shifted gearbox having two forward speeds—high and low range, and reverse. The shift is selected by the driver in accordance with operating conditions and usually the lever will be in the high or direct range.

Since there is no mechanical clutch in the circuit and since the transmission has no synchronizers, special means are required for effecting shifts either forward or reverse. At the outer end of the tailshaft extension is mounted an external brake drum to which is applied a brake-actuating mechanism. This mechanism can be one of several types, one suggested arrangement being a booster cylinder with a push button control on shift lever to actuate a solenoid control valve which will provide effortless control. In any event the function of the brake is to stop the entire tailshaft assembly including the converter-coupling at the moment a shift is to be made, permitting at the same time a slight rocking movement of the shaft so as to facilitate engagement of gear teeth. Thus the brake is engaged as the shift lever is moved.

END

Please resume your reading on P. 80

THE
BIEDERMAN
TRUCK

An All-Star Truck
Constructed of All-Star Units
Doing an All-Star Job Since 1920

DEALERS: Compare the Biederman National Standard Model with any truck on the market and you will agree that it is an All-Star team in itself.

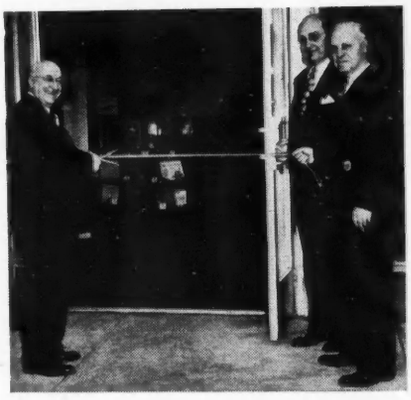
Only the most sturdily constructed units of America's leading manufacturers are built into it.

Biederman Trucks win by performance. Inquiries regarding dealership solicited.

WRITE, WIRE or PHONE

BIEDERMAN MOTORS CORPORATION
CINCINNATI 14, OHIO

Brooklyn Branch for IHC



J. H. Kline, N. Y. district manager for International trucks, cuts the ribbon held by W. K. Perkins, sales manager, and P. V. Moulder, executive vice-president of International Harvester, to officially open the company's motor truck branch in Brooklyn. International now has eight truck branches in the N. Y. metropolitan area

★★★★★★★★★★★★★★★★★★★★★★★★★★

JOBSERVATION

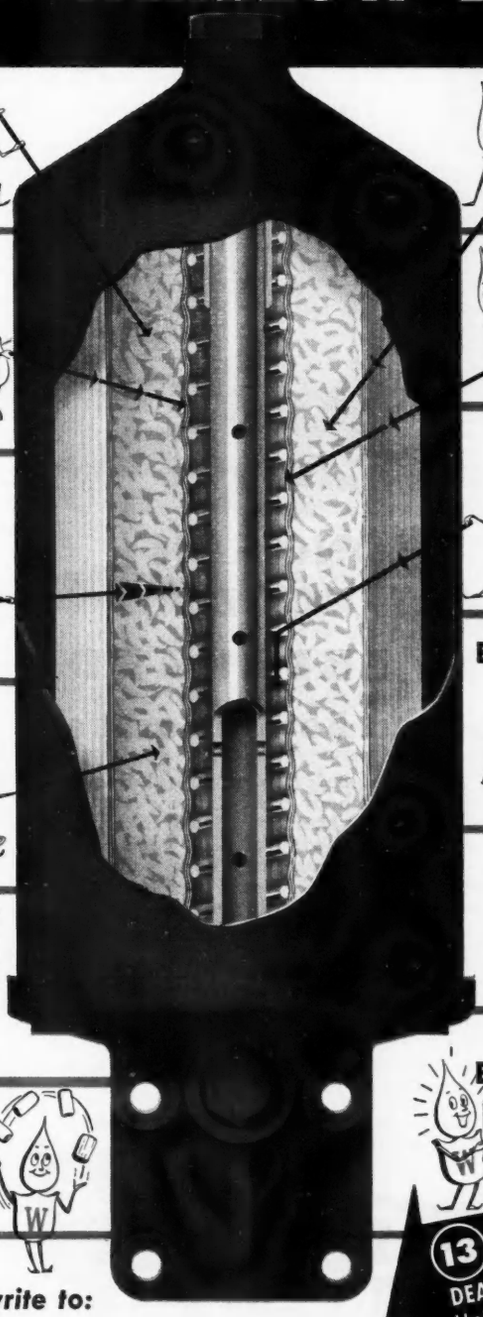
No one is more empty than he who is full of himself

★★★★★★★★★★★★★★★★★★★★★★★★★★

13 is your lucky number

ONLY WHEN YOU PROTECT YOUR ENGINE WITH

WINSLOW FILTERS



1 REMOVE ACIDS by special neutralizing agents.

2 STOP MOISTURE at water-repellent surface, absorb residue in element fibers.

3 TRIPLE SAFETY Patented rupture-proof double covering; element materials harmless to engine; additives unchanged in compounded oils.

4 TRAP ABRASIVES such as gritty carbon, dust, or metal particles.

5 TOP EFFICIENCY Channels narrow toward center, stop larger particles first, smaller ones later, hold them *all*.

6 FREE FLOW Entire outside surface filters oil; spring coil core maintains free flow.

7 LONGER LIFE Element fibers absorb impurities, straighten out, keep channels open for longer use.

8 ELEMENTS HOLD DIRT twice, triple, quadruple their original weight.

9 RIGHT SIZE Winslow Filters for all sizes of engines.

10 FULL-FLOW Filters *all* the oil oftener, cleaner.

11 ELEMENTS FOR ALL standard makes of filters.

12 ENGINEERING SERVICE to meet special filtration problems.

13 DISTRIBUTORS AND DEALERS throughout the United States, Canada, in foreign nations, offer convenient service.

DETAILS? Gladly. Just write to:

WINSLOW FILTERS

Winslow Engineering Company

4069 Hollis Street • Oakland 8, California

GM's Five-Year Labor Contract Reflects

Pensions, insurance, wages, economic and contract issues covered in long-term package

By Len Westrate
CCJ Staff Correspondent

A TRUCK BODY IS NO BETTER THAN ITS HARDWARE...

Body by Quality Equipment & Supply Co., Inc., Charlotte, N. C. Locks, Hinges and Door Holder by Eberhard.

That's why E LONG RUN TRUCK BODY HARDWARE by EBERHARD is used on More of the Better Bodies

● The vast majority of sound, firmly established body builders have learned to rely upon Eberhard Long Run Truck Body Fittings to meet their general or specific requirements. They know "A Truck Body is No Better than its Hardware"... Consequently they build with the best... Circle E.

The Eberhard catalog serves as a guide to wise purchasing. You'll find it helpful and informative.

Hundreds of items to fill the body builders needs are clearly illustrated and described in the New Catalog.

Write for the NEW EBERHARD CATALOG TODAY.

YOUR FILES ARE NOT COMPLETE WITHOUT THIS NEW CATALOG.

EBERHARD Long Run TRUCK BODY FITTINGS E

EBERHARD MANUFACTURING CO.

Division of the Eastern Malleable Iron Co. EVARTS AVE. CLEVELAND, OHIO

ANALYSIS of the five-year agreement between General Motors and the UAW-CIO reveals two significant facts. One is the obvious confidence of General Motors that business conditions over the next five years are going to remain at a high level and thus warrant an annual wage increase of four cents an hour with a limit of 3 cents an hour decline no matter how low the cost of living index may go. The other is definite contractual recognition by the union of the importance of technological process including better tools, methods, processes and equipment and a cooperative attitude on the part of all parties in such progress.

Some interesting speculation arises in connection with the unique escalator clause in the new contract. The union had previously contended that the cost of living provision would be abandoned, but with its adoption again for the next five years, it may well become a fixture not only in GM contracts, but in others as well, if tied in with an annual improvement factor. Such a development would certainly go a long way toward eliminating the bitter wrangles over wages that have plagued the industry for so many years. There might have to be some modifications, of course, particularly in the amount of the improvement factor at companies which may not be so efficient as GM, and the minimum level at which a drop in the cost of living would not be followed by a decline in wage rates.

The annual improvement factor—gearing of wages to cost of living—pensions, fixed contributions into a retirement fund regardless of changes in federal social security, life insurance, and sickness and accident benefits all had been granted in the previous contract by GM or by other companies in the industry before General Motors signed its current agreement.

It is the first time, however, that any company has been able to work out an agreement covering not only pensions and insurance, but also wages and all economic and contract issues for as long a period as five years. Such a move is certain to have far reaching effects not only on General Motors but on the entire industry and perhaps in other industries. The trend over the past two or three years has been for longer contracts and the new General Motors agreement will go a long way toward stabilizing the labor situation for long intervals.

There long has been evidence that labor unions have not been sympathetic

Confidence

to introduction of new processes and equipment which may tend to turn out much more production with the same number or fewer workers. GM has scored a significant point by writing into its contract the recognition by both parties that such methods and equipment are essential for greater efficiency, lower costs, and higher wages and that "to produce more with the same amount of human effort is a sound economic and social objective."

Effects on Other Companies

EFFECTS of the GM settlement on other companies in the industry still is uncertain. It is believed, however, that one result will be drives for higher wages at Ford when the contract is open on that question next Jan. 1, and at Chrysler on May 1 of next year. Meanwhile, a more immediate question is how smaller industries and parts suppliers who have not yet concluded pension agreements with the union will fare. Obviously, many smaller companies simply cannot afford the kind of package that GM gave its employes. A company like Packard, for example, with an average age level of employes in the early 50's would face a staggering cost for funding past service credits. Some observers believe that in such cases most of the package would have to go for pensions, with insurance and other benefits side-tracted for the time being. Most smaller companies have been holding contract talks in abeyance waiting for the Big Three to settle. However, ability to pay certainly is going to come into the picture again but in reverse order from what it was when the union was pushing that point of view in the GM strike of 1946. Of the independents, Nash is the only company so far to conclude a pension agreement, although Kaiser-Frazer has a tentative agreement to pay pensions on a basis very similar to the Ford plan. Details are being worked out with the union.

There is some talk that the area wide pension program which the union failed to get in the Toledo area may be introduced as a possibility for the smaller automobile companies. Under that arrangement, the smaller companies band together and pay pension contributions into a common fund, equalizing the cost. An advantage to employes is that they may shift from one plant to another within the group without losing retirement benefits. Such a plan recently was put into effect in the Detroit area pro-

(TURN TO PAGE 160, PLEASE)

COMPARISON OF COMPANY-PAID PENSION PLANS AT GM, FORD, CHRYSLER, NASH

	FORD	NASH	CHRYSLER	GENERAL MOTORS
Date of agreement	March 1, 1950	March 15, 1950	May 4, 1950	May 23, 1950
Retirement benefit at normal retirement age including F.S.S. (mo.)	$100	$100	$100	$100
Pension increase if F.S.S. raised	No	†	No	Yes
Company's share decreased if F.S.S. raised	Yes	No	Yes	No
Duration of agreement	5 Years	5 Years	5 Years	5 Years
Normal retirement age; years of service for full pension	65—30	65—25	65—25	65—25
Automatic retirement age	65	68	68	68
Work beyond retirement age	To 68*	†	§	§
Early retirement provision at proportionately lower benefit	Yes	Yes	Yes	Yes
Disability pension provided	Yes	Yes	Yes	Yes
Vesting	No	No (but study committee to report by end of 1950)	No	No
Earliest date of compulsory retirement	Jan. 1, 1951	July 1, 1951	Jan. 1, 1952	Jan. 1, 1952
Accrue service credits after 65	No	Up to 68	Up to 68	Up to 68
Union share in control of fund	No	No	No	No
Company-union joint committee on pension eligibility	Yes	Yes	Yes	Yes

* At company's option. † Subject to negotiation. § With company consent. F.S.S. Federal Social Security.

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Trade-Mark
REDUCE
WELDING COSTS Four Ways

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2 You weld easier and faster—saving gases and labor—because all OXWELD Rod formulas are worked out to give highest weldability and best possible physical properties.

3 You get better welds at lower finishing costs, because welds made with OXWELD Rods are always of uniform high quality, strength, and ductility—easy to machine and finish.

4 You need fewer types of rods to handle all your welding. Five OXWELD Rods—Nos. 1 H.T., 7, 25M, 23, and 9—are sufficient for all average fusion welding, braze-welding, and bronze-surfacing. For the less frequent jobs of specialized nature, there are 9 additional welding rods and 8 hard-facing rods—all available from the same source.

There's a PREST-O-WELD or PUROX Jobber nearby to serve you promptly. If you don't know him now, write: The Linde Air Products Company, 30 E. 42nd St., New York 17, N. Y.

"Oxweld," "Prest-O-Weld," and "Purox" are trade-marks of Union Carbide and Carbon Corporation.

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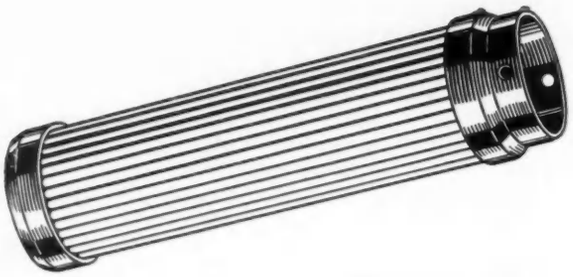
Order from your local Jobber



Action chamber consists of copper-nickel wires brazed to rings at each end to form cylindrical cage. Vibrations of wires dampen noise. Thoroughly established formulae are used in designing various units

WIRE CAGE

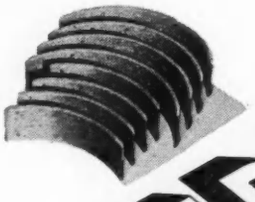
Controls Exhaust Noise

Low back pressure and dampened sound waves result from high frequency vibration of wires

MORE THAN *good* PERFORMANCE

BOBBY JONES won the National Amateur Golf Championship 6 times, the National Open 4, and the British open 3 times.

MOLD — BLOK MAKES ITS OWN RECORDS IN DAY BY DAY PERFORMANCE THAT IS BETTER THAN GOOD. ON THE FLEETS OF MANY OPERATORS IT GIVES EXCEPTIONAL SERVICE YEAR AFTER YEAR.



MOLD-BLOK BRAKE LINING

- NON SQUEAL
- NON-SCORING OF DRUMS
- LOWER COST PER MILE TO OPERATE
- UNIFORM CO-EFFICIENT OF FRICTION

MOLDED MATERIALS DIVISION
OF
CARLISLE CORPORATION
RIDGWAY, PA.

A RADICAL departure from the usual design of automotive mufflers is the new Caulkins Muffler which is said to offer better noise control with lower back pressures. Adapted from approved models employed on certain aircraft, units have been designed, constructed, installed and tested on automotive vehicles with exceptional results.

Construction Details

THE MUFFLER consists of an outer shell with a non-rigid, renewable, action chamber mounted therein. The walls of this cylindrical action chamber are made of copper-nickel wires laid close together, leaving approximately .001 to .002 in. between the wires. The wires are brazed to a narrow ring on each end of the element. A baffle is incorporated at the outlet side of the element.

The wire cage element is located within and secured at the inlet side to the outer shell. Three guides are welded on the exhaust end to act as guides for the element when it expands.

Depending upon the degree of noise suppression desired, units can be made in single, two or three stages. A typical single stage element is approximately 8 in. long and 2 in. in diameter. The outer shell merely adds a few inches to the total overall length.

Muffler Operation

EXHAUST gas entering the chamber under pressure and pulsations, sets up minute vibrations in the wires. The entire structure instantly responds to the increased pressure and the wires bow outward symmetrically, thereby increasing the area between them. As the pressure

(TURN TO PAGE 157, PLEASE)

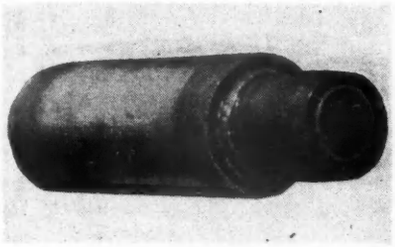
Wire Cage

Continued from Page 154

is relieved and the exhaust gases pass out the end of the unit. At the same time, the vibration of the wires sieve out and effectively dampen the sound waves.

Test Results

TESTS conducted over the past year indicate that by using this new wire cage type muffler, exhaust gas back pressure can be reduced, that



Complete muffler unit with baffle at exhaust end of action chamber shown. Three fins guide expansion of the action chamber during engine operation

the sound level is comparatively uniform throughout the speed range, and that engine operating temperatures are lower because of the reduction in back pressure.

On one particular installation, a manometer was installed 12 in. below the engine exhaust manifold in the exhaust pipe. A new Caulkins muffler was installed at the end of the tail pipe. In operation over a road with zero grade, exhaust back pressures were recorded at .30 in. of mercury at 30 mph and approximately 1.25 in. of mercury at 60 mph.

END

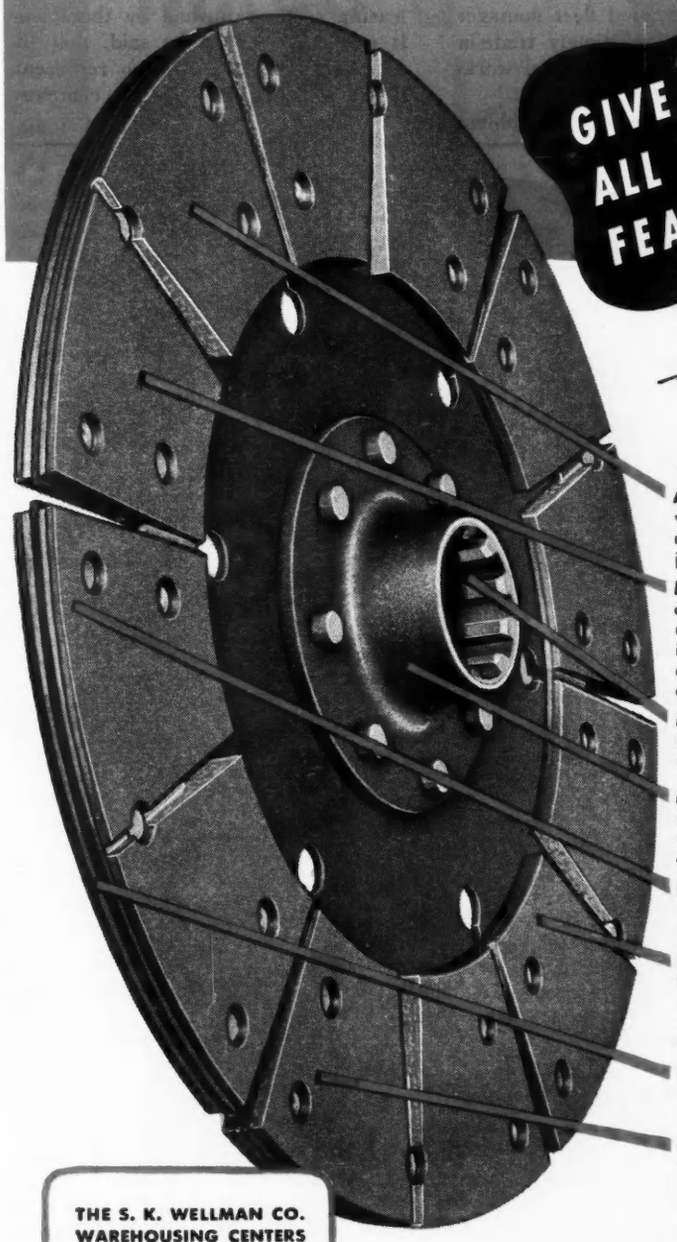
White Earnings Show Gain

The White Motor Co. delivered 2,843 trucks and buses in the first quarter of 1950, which compares with 2,678 deliveries in the first quarter of 1949. Sales amount to $19,500,000 compared with $18,800,000 for the first period of the previous year. Earnings for the first quarter were approximately $363,000 or 53¢ a share on the common stock outstanding as of March 31, 1950. This compares with a loss of $96,000 for the first quarter of 1949.

March deliveries of White Trucks and Buses were the largest of any month since June, 1948.

ONLY VELVETOUCH
ALL-METAL CLUTCH PLATES

GIVE YOU ALL THESE FEATURES



ADDED MILEAGE. Velvetouch lasts longer, requires fewer adjustments.

EXTRA SAFETY. Metal construction insures uniform friction . . . is little affected by extreme operating conditions.

EASY INSTALLATION. Precision machined to speed installation.

HEAVY DUTY HUB. Forged steel hub and spring steel plate cut expensive tear-outs.

LOW COST. Measured in added mileage, Velvetouch costs less.

NOT AFFECTED BY OIL OR GREASE. Unlike asbestos, oil and grease can't harm Velvetouch.

HEAVY DUTY BUILT. Friction is fused with solid steel backing.

RUNS COOLER. Asbestos won't conduct heat, but Velvetouch carries it away to protect opposing plate.

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Velvetouch over 25 years of service 1924-1950

THE S. K. WELLMAN CO.
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Truck Leasing—to Pay or Not to Pay

Continued from Page 71

replacing vehicles in out of the way locations by leasing companies, showed how he had made arrangements for new cars to be delivered directly to the salesmen's homes, with the trade-in being driven away without any inconvenience on the part of fleet personnel. He implied that a good fleet manager can take advantage of timely trade-in points by studying markets and working with reliable dealers.

Mr. Mathews outlined the problem of fixing costs in the leasing company as compared to anticipating costs of equipment in the fleet. He drew a graph to show anticipated rising maintenance and operating costs of a vehicle over its expected life span, then a horizontal line representing the fixed leasing cost established by the lessor. It can be expected, he said, that the difference between the two represents some profit to the leasing company. However, much of this is offset in risk taken by the company, he stated.

As far as operating costs go, few hard, cold figures were given, so that dollarwise, little conclusion could be drawn either for, or against leasing. Gardner listed actual cost figures for his vehicles and challenged leasing systems to beat them. There were no takers. It was agreed by all representatives of the various leasing companies, that they may not be able to compete with efficient well-run fleets with skilled supervisors, good maintenance systems and adequate records.

It came up again, when Haley, of Koppers Co. clarified points with regard to the article appearing in *Business Week* some time ago. Koppers does not lease all equipment, he stated, in answer to a query from Gardner. Only vehicles used for tough, heavy-duty, or out-of-the-way service are leased. Again, leasing has worked out for this company to advantage because of the fact that there has not been a centralized automotive department.

As has resulted in scores of instances before, and surely will in any future discussion of this subject, both sides must reach a compromise. Stripped of its half truths and covered with cold facts the question of leasing vs. ownership resolved to this:

1. Small companies in most cases, and larger fleets in some cases, can afford to lease all or part of their equipment. However, this again must be qualified. When such companies are more interested in the main business —when the main business is not transportation, leasing vehicles may save time, headaches and money.

2. If companies are willing to set up a sound maintenance program, headed by competent supervisors adept technically and skilled in finance and bookkeeping, leasing may not offer anything. In this case the fleet is quite able to compete with lessors in buying, in selecting, in retiring, in maintaining and in figuring costs and profits.

3. Where companies desire to expand, put profits back in the business or where credit is not easily obtained, leasing may be their answer in that it will provide sound, reliable, fixed transportation costs at a figure quoted on a long-term basis.

4. Leasing has a time and place value in that at peak periods—or for outlying districts—or for especially rugged operating conditions, it may pay to take advantage of extra equipment through hire.

5. There is *a* spot for leasing in the transportation picture, but it will take longer than a French Lick afternoon to determine the *where* and *when* even for average small fleets.

END

Please resume your reading on P. 72

STOP!
HOT WEATHER TIRE PROBLEMS

HI-TEMP *Heat-Resisting*
VALVE INSIDES AND CAPS
Developed by DILL
REG. U. S. PAT. OFF

Dill HI-TEMPS solve air pressure maintenance wherever tire heat is a problem. *Under abnormal hot tire temperatures, even up to 300°F. and more, the newly developed heat-resisting air seal keeps Dill HI-TEMP valve insides and caps airtight.* Stop road delays, prevent costly tire repairs, increase tire mileage by equipping your tires with Dill HI-TEMPS, now. Your wholesaler, tire or oil company can supply you, today.

No. 100-AH Valve inside with special heat-resisting rubber in cup and on barrel.

No. 632 Dome type cap with swivel gasket of special heat-resisting rubber.

No. 631 Hexagon type cap with lead gasket mounted over brass sleeve.

Ask for Dill "Hi-Temp" in the new Orange and Yellow Carton.

NEW *Long-Handled* VALVE REPAIR TOOLS

This new handy tool kit will save time and trouble for your tire service man. Each tool is long-handled — especially designed to reach inner dual tires for removing and replacing valve insides, caps, and making necessary repairs on valve stems. The complete set of 6 tools comes in a handy leather pouch with snap button lock and fits in pants, coat or jacket pocket. Order from your wholesaler, tire or oil company, or write us for descriptive folder.

No. 5200 TOOL SET in Handy Leather Pouch

INCLUDES THESE TOOLS

No. 5201	Valve Inside Inserter and Extractor
No. 5202	Valve Cap Tool
No. 5203	Valve Inside "Easy-Out"
No. 5204	Valve Stem Refacer
No. 5205	Valve Stem Seat Cleaner
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Make YOUR choice from the complete line of

Hein-Werner HYDRAULIC JACKS

Available in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity

Take a tip from thousands who speak from experience—you can't beat a Hein-Werner Hydraulic Jack. Every model in the H-W complete line is built right and priced right.

Hein-Werner also manufactures "Bumper-Lift" Hydraulic Jacks for passenger cars . . . "Swift-Lift" and Service Jacks for shop use . . . Cylinder Sleeve Pullers . . . and "Push and Pull" Hydraulic Jacks for body, fender and frame work.

Ask your jobber or write us for details.

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BASIC:

:of or pertaining to the base or essence-

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GM's Labor Contract

Continued from Page 153

Influence on Prices

SO FAR very little has been said about the effect of pension plans on automobile prices. Previously, wage increases have been reflected in increased prices for the product. Since pension plans have come into vogue prices have not increased, leading to the fallacious belief that somehow pensions do not represent an added labor cost the same way that a direct wage increase does. Nothing is further from the truth, of course, and the added cost will have to come from somewhere and there are only two sources—the company's own profit or the customer. Obviously, some of the larger companies may be able to absorb all or part of the added labor cost, but it is not conceivable that they are going to greatly reduce their percentage of profit and even though prices don't go up, reductions are less likely or in some cases would not be nearly as great as would be the case otherwise. There are, of course, many smaller companies whose entire profit would be nowhere near as great as the cost of a pension program and for them the outlook is a bleak one since about the only way to recover the expenditure would be in the form of a price increase, a dangerous remedy in a competitive market, especially if their larger competitors do not do so.

According to union estimates, the General Motors package deal amounted to 19 cents an hour, a figure which qualified observers say is high. It generally is believed that cost to GM is somewhere from 15 to 16 cents an hour, which still is considerably above the 10 cents won from Chrysler, Ford and Nash.

END

"I'll be the truck driver and you be the dopey woman driver in front of me."

INCREASED 172%

MAINTENANCE PLAN

Peterson-Burston SCREW-IN VALVE SEAT

ELIMINATES *REAL* CAUSE OF VALVE BREAKAGE-BURNING

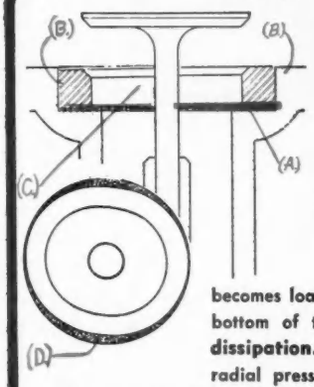
Triples Mileage Between Valve Grindings On Engines Pulling Heavy Loads

We asked hundreds of fleet operators if they were having trouble with *valve seats*. . . NO, they weren't. Then, were they having trouble with the valves themselves . . . unanimously YES!

The truth is, *nearly all valve trouble stems from the seats.* The revolutionary P-B Threaded-In Valve Seat puts an end to constant breakage, burning and replacement by solving the two main problems of valve maintenance — *HEAT DISSIPATION* and *CONTROLLED EXPANSION.* In an older engine, minor wearing points, corrosion, poor carburetion, bad timing and inaccurate factory clearances will make the engine run hotter. It *must* have valve seats that will take more heat.

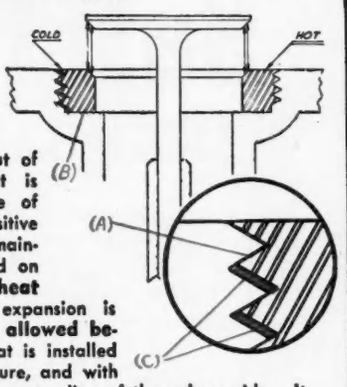
Fleet owners all over the country today regrind their old collapsed, buckled or distorted pressed-in valve seats . . . then have to regrind *again* in 1,000 to 11,000 miles, because the *basic trouble wasn't corrected.* Now, a simple P-B replacement job when the engine comes in for its first grinding means *another 30,000 to 40,000 miles of care-free service* — a *minimum* of 172% more valve mileage!

LOOK WHAT HAPPENS!



WITH ORDINARY PRESSED-IN TYPE VALVE SEATS

When heat causes a pressed-in seat to expand upward from the bottom counterbore. On cooling, it contracts evenly from top and bottom leaving space (A) which becomes loaded with carbon. This insulates the bottom of the seat ring causing **poor heat dissipation.** Being press fit, the seat exerts radial pressure at point (B). Under extreme heat this pressure is increased and eventually the seat will collapse, buckle or distort them when seat tilts (C) and loses contact with sides (D) the valve will burn or break.



WITH **P-B** SCREW-IN VALVE SEATS

The P-B seat cannot push out of the counterbore, because it is locked in by the top side of threads on seat (A). Positive metal to metal contact is maintained at the bottom (B) and on all sides, giving **excellent heat dissipation.** Normal heat expansion is taken care of by **space (C) allowed between threads.** The P-B seat is installed without exerting radial pressure, and with perfect concentricity with the center line of the valve guide. It will maintain the inside dimension, stay in alignment, and allow for perfect seating of the valve. This eliminates valve breakage or burning due to high points caused by the tilting of the seat.

HOW *You* CAN SAVE WITH **P-B**

Stop costly breakdowns that are robbing you of $200 to $500 each. Keep your trucks on the road, in the shop less than half the time they now spend there. P-B Master Shops, with a complete set of equipment, are now operating in all major cities.

SHOP and FLEET OPERATORS MAIL THIS COUPON *Today*

PETERSON WELDING LABORATORIES, INC.
Dept. C-1, 1423 Virginia, Kansas City, Mo.

Please send me, at no obligation, complete information and prices on the P-B Valve Maintenance Plan and give me the name of the P-B Master Shop nearest me!

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ADDRESS.....

TOWN.....STATE.....

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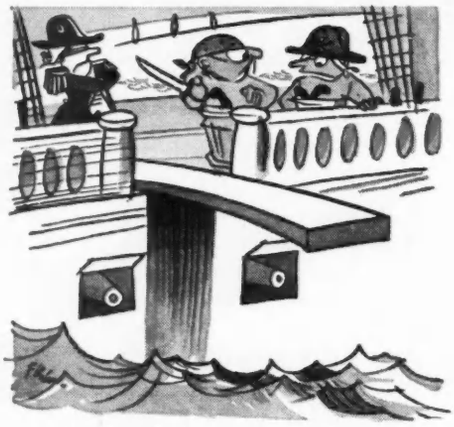

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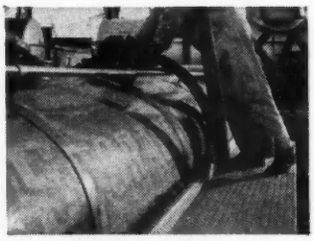
For greater safety under foot, in your plant and on your products

Inland 4-Way® Safety Plate

Firesafe



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Easy To Fabricate

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Maryland Road Test

Continued from Page 56

As a result, the engineers in charge of this test laid out specially-marked courses along which the test trucks are travelling. The markings consist of guide lines of yellow and white reflecting traffic paint. One out of every five trips over the course is made with the vehicle's wheels on the white lines. One of the five trips is made along the yellow lines, and three trips are made in the area between the yellow and white lines.

Automatic Controls Used

TO INSURE accuracy and to aid the drivers in following the courses in the proper sequence, an automatic signalling device has been installed on the dash of every test vehicle. This device consists of two lamps, one yellow and one white, mounted in a case containing the necessary wiring hook-up and switches. When the yellow lamp becomes illuminated, the driver follows the yellow markers. When the white light is illuminated, he follows the white road markers. When neither lamp is illuminated, the driver follows the intermediate course between the yellow and white lines.

Flashing of the lights is controlled automatically by a microswitch installed on the steering arm sector at the end of the steering column of each vehicle. As the driver completes one trip, and turns around for the return trip, the microswitch contacts a special cam during the turn. This actuates a stepping switch, such as used in the operation of dial telephones, which operates the lights.

Thus, after the yellow course is travelled once, the microswitch actuates the stepping switch to the next contact to flash the white light. Inasmuch as the next three points of the stepping switch are not connected with the lights, there is no illumination of the light signals. The light signals are bright enough to be seen clearly during the day as well as in the night.

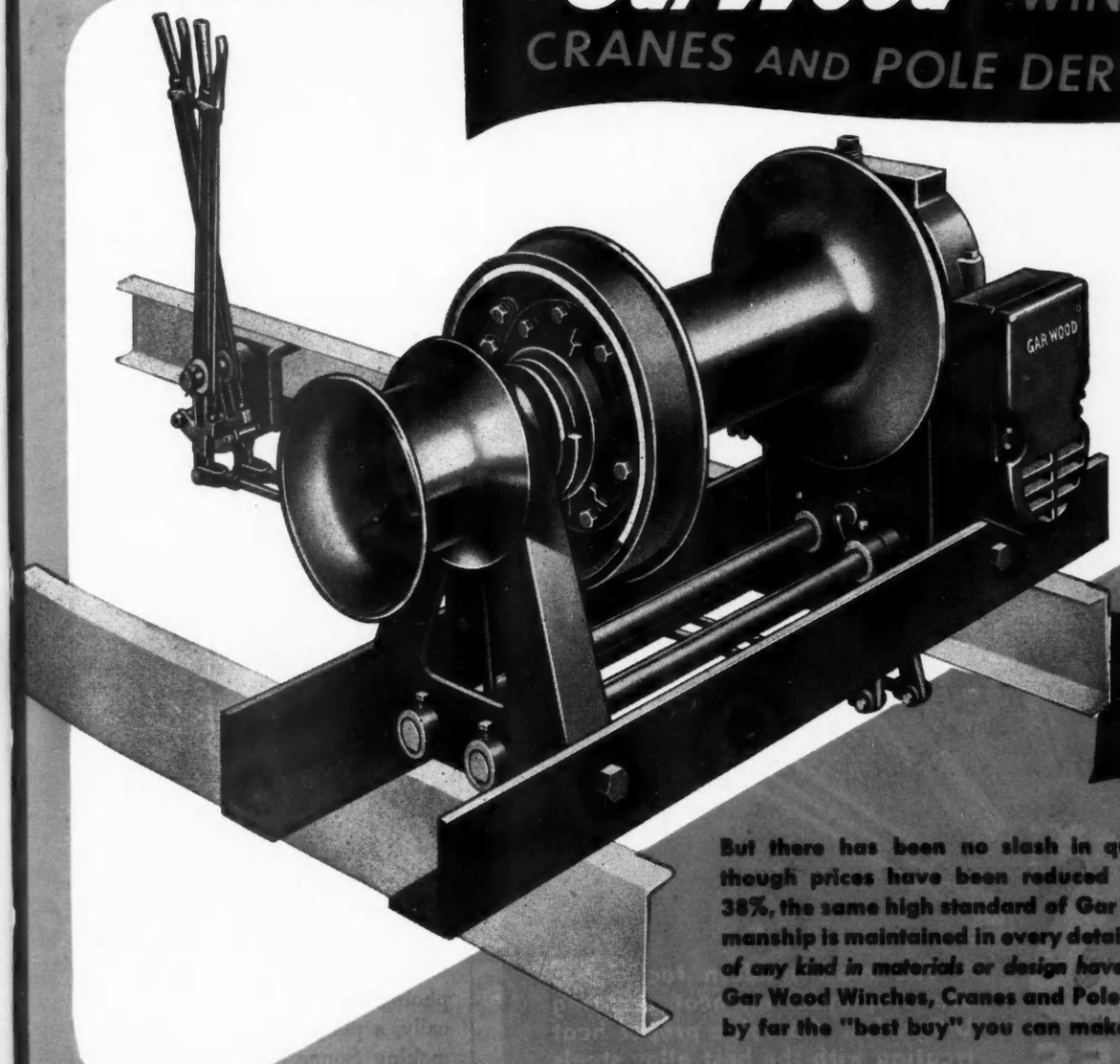
Automatic Trip Counters

EACH trip over the course is automatically recorded by means of a photo-electric-cell counter. Each vehicle has a beam interrupter lo-

(TURN TO PAGE 166, PLEASE)

Prices Slashed...

on all Gar Wood WINCHES CRANES AND POLE DERRICKS



Model 2MB Gar Wood Winch. *PRICE IS REDUCED APPROXIMATELY 27%.* Quality remains unchanged.

But there has been no slash in quality. Even though prices have been reduced from 6% to 38%, the same high standard of Gar Wood workmanship is maintained in every detail. *No changes of any kind in materials or design have been made.* Gar Wood Winches, Cranes and Pole Derricks are by far the "best buy" you can make.

ASK YOUR NEARBY GAR WOOD DISTRIBUTOR OR BRANCH TO QUOTE ON YOUR NEXT ORDER. THEIR LOW PRICE WILL PLEASE YOU.

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC. *Wayne Division, Wayne, Mich.*

PRODUCTS—HOISTS • DUMP BODIES • WINCHES • CRANES • TRACTOR EQUIPMENT
DITCHERS • SHOVELS • FINEGRADERS • SPREADERS • TRUCK PATROLS

Maryland Road Test

Continued from Page 164

cated on the top of the cab. This is nothing more than a panel containing the vehicle's number. These panels are arranged so that, when two vehicles pass the trip counter at the same time, both vehicles are counted because their identification panels are of different heights. This precludes errors in recording the trips.

It is interesting to note that the engineers refer to each trip as an "application." This designation applies to "application of the weight of the vehicle to the paving." Thus, all engineering records of the test will be in terms of "applications," rather than "trips," on each concrete slab of the paving.

It is estimated that between 1,000 and 1,200 "applications" will be made over the test strip daily. This is greater, of course, than found under the heaviest traffic conditions anywhere in the country. Therefore, the six-month test will represent many years of normal traffic.

Test Sponsored by 11 States

OFFICIALLY labelled "Road Test One—MD," this historic test is sponsored by 11 states—Connecticut, Delaware, Illinois, Kentucky, Maryland, Michigan, New Jersey, Ohio, Pennsylvania, Virginia, Wisconsin—and the District of Columbia.

It is being conducted by the Highway Research Board, Division of Engineering and Industrial Research, National Research Council of the National Academy of Sciences, under the direction of Mr. Roy W. Crum. Chairman of the Project Committee is Mr. Fred Burggraf, associate director of the Highway Research Board, assisted by Mr. W. N. Carey, Jr., of the Highway Research Board.

Other members of the Project Committee are Mr. Albert S. Gordon, executive assistant to the chairman of the State Roads Commission of Maryland; Mr. T. J. Kauer, director, Ohio Department of Highways; and Mr. H. S. Fairbank, deputy commissioner, Bureau of Public Roads.

Project engineer is Mr. A. Taragin, whose services are being donated by the Bureau of Public Roads. He is assisted by three highway engineers —Jack R. Hutchins, Sydney W. Smith and Theodore Dec—supplied by BPR. The Bureau also has loaned the project a number of scientific instruments and is handling laboratory tests of the soil and concrete paving.

The Project Advisory Committee is composed of a representative of each of the participating states, the Bureau of Public Roads, American Trucking Assns., Inc., Automobile Manufacturers Assn., and the Department of Defense.

Enthusiastic support also is given the project by the Department of Defense and industry. The Department of Defense is making aerial photographs of the project. Periodically, a plane flies at a 300-ft height making Sonne strip photographs of the road's surface.

Seven truck manufacturers have supplied vehicles for the test—Ford, Reo, General Motors, Autocar, White, International Harvester and Mack. Maintenance facilities of an independent repair shop, three miles from

(TURN TO PAGE 168, PLEASE)

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ONE REASON U S AXLES ARE
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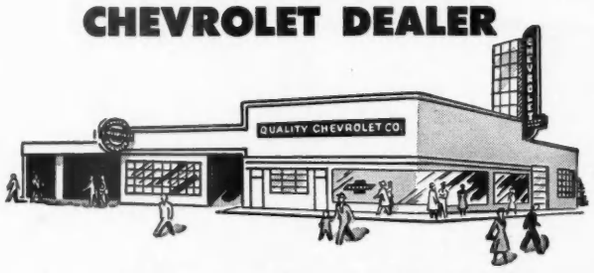

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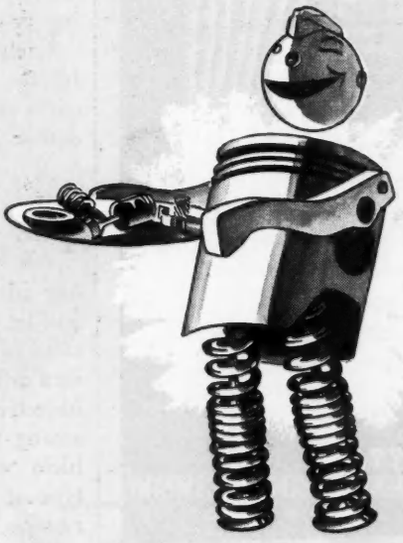

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Rush my sample of PLASTILUBE
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Our 50th Anniversary Year

Maryland Road Test

Continued from Page 166

the test strip, have been engaged for the maintenance operations.

The petroleum industry is supplying the gasoline and lubricants.

Other necessary assistance, such as clerical work is being handled by the Highway Research Board.

60 People Doing Field Work

BETWEEN 50 and 60 people ultimately will be engaged in the field work of this test. Of these, approximately 30 are regular drivers, with a "call list" of about 10 more drivers to take care of emergencies. Drivers for the vehicles have been obtained from available supply of truck drivers in the test vicinity.

A daily truck record form is being maintained. This is arranged to cover three shifts and provides room for names of drivers and relief drivers for each truck, shift starting and finishing time, odometer readings, the number of trips or "applications" and gas-oil consumption.

Every morning, the field engineers cover the entire course. They make a visual examination of the paving to determine if any surface failures developed as a result of the preceding day's "applications."

Each engineer carries card records for the paving he is examining. The cards show existing defects. All new defects are recorded and dated.

Major Objective

THE test aims to determine the effect of truck transportation on our highways. No special controls will be employed to determine the results of any highway or vehicle design or construction factors. The sole objective is simply resolved to measuring the effect of the various vehicle weights upon that particular type of highway. Thereby, the facts can be related to buses and trucks.

"We are only recording factual information of the effects of these vehicles on this segment of Highway 301, and nothing more," said Mr. A. Taragin, project engineer. "We have no preconceived notions, we are not trying to relate this test to any other test. We will merely prepare a report of what happens under the clearly defined test conditions established."

END

Please resume your reading on P. 58

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TRUCK WEIGHTS
L&H
BALANCE WEIGHTS

LH-LIW for light truck rims.

LH-6 for limited clearance applications.

LH-1 through LH-5 fit all other truck rims.

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THE "ENGINEER APPROVED" PISTON

You are safe and sure when you follow the recommendation of your engine designers. Specifically tailored to individual engine specifications, Zollner Pistons are the expert product of hand-in-hand engineering development with engine builders. You get utmost performance and economy of operation when you recondition with Zollner "Engineer Approved" Pistons. Today, as for many years, over 70% of all makes of trucks and buses are Zollner equipped. Like the vast majority of fleet owners, your experience records will prove Zollner is always the "best buy" in pistons — the choice of automotive engineers.

ZOLLNER

ORIGINAL EQUIPMENT IN AMERICA'S FINEST MOTORS

HEAVY DUTY PISTON EQUIPMENT

ZOLLNER MACHINE WORKS FORT WAYNE, INDIANA

New Product Descriptions

Continued from Page 86

P228. Speed Control

The Safety Speed Governor controls vehicle speed and engine rpm through a combined electric governor with electro-magnetic gas control. Controlled by either the speedometer or engine rpm, the unit closes the gas control butterfly to idle position when maximum vehicle or engine speed is reached. Normal operation is resumed when speedometer or engine speed returns under pre-set maximum. To control engine speed, cable connects governor and swivel gearbox attached to the generator. By connecting wire to horn, driver is warned shortly before governor cuts in. Safety Speed Control Co., Miami, Fla.

P229. Timing Light

"King" power timing light for 6 or 12-volt ignition systems obtains power for the intense blue-white beam from a powerful built-in amplifying powerpack. The manufacturer states that this design makes ignition timing easy even in direct sunlight. The unit is housed in a molded case of the flashlight type. Electric Heat Control Co., Cleveland, Ohio.

P230. Station Wagon Body

The Safetymaster, an all-steel safety station wagon body, features a hi-tensile steel body frame, tubular construction, stretcher levelled panel sheets, removable seat frames with cushions upholstered in synthetic leather, and

shatterproof glass. Suitable for a school bus, three models, seating 8, 11, or 15 passengers, are available. Stewart Truck Bodies, Inc., Brooklyn, N. Y.

P231. Carboloy Sockets

A new line of impact "Supersockets" for driving case-hardened, self-tapping screws with power tools of all types features the screw drive opening formed of Solid "Carboloy" which is permanently inserted into a hardened steel blank. Two sockets are now available in ¼-in. square drive with ¼- and 5/16-in. nominal hexagon openings. Both sockets fit hex, hex washer and oval hex heads. Finish is satin nickel. J. H. Williams & Co., Buffalo, N. Y.

P232. Paint Can Spout

This pouring spout is snapped in place on the can after removing the lid and permits faster stirring of paint without the usual slopping over the edge. The shape of the spout makes pouring easier, reduces dripping down the side of the can, and forms a resting place for the brush.

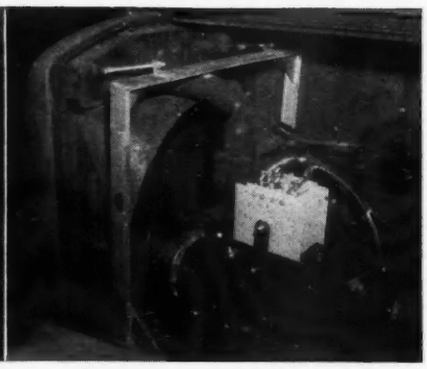
The manufacturers claim that the rim of the can is kept cleaner for an airtight sealing and easier reopening. G. E. Oxley Mfg. Co., La Verne, Calif.

P233. Shovel Attachment

A scoop shovel attachment for fork lift trucks has full hydraulic operation through the cycle of picking up a load, tilting back for carrying, dumping and return to scooping position. It is in-

(TURN TO PAGE 172, PLEASE)

Prevents Breakdowns with Simple Welded Repairs



Reinforces Hangers *by fillet welding hanger bracket directly to frame member with Lincoln® "Fleetweld 7". Eliminates danger of working loose from road pounding as with original riveted construction.*

Builds Radiator Support *and cuts down leaks in radiators. Simple support, welded directly to frame, allows radiator to float independently of cab body and minimize damage from constant road pounding.*

By arc welding reinforcements to vital truck and trailer parts, this typical fleet operator now eliminates many of his former road failures. Most of these reinforcements are made at remarkably low cost, using simple steel angles, channels and plate welded to frame and body members with Lincoln arc welders.

GIVES EASIEST WELDING

The *arc starts automatically* with this new low priced "Fleetwelder". No bothersome electrode sticking as on other AC welders. Its 30 to 250 amp. range more than handles all your body and frame work. Operates on single phase power for easy installation.

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Buckingham Transportation Company, wit headquarters in Rapid City, South Dakota, has sprea the fame of its motto, "Ship by Truck—Call Buck," fro Minneapolis to Denver. Oliver Buckingham, a partne in this successful firm, says: *"Our cost statistics sho that, although the average loads pulled by ou Kenworths have been greater than the loads pulle by our other equipment, the Kenworths' cost per mi to date is 3.6 cents less than the other equipment w are operating."*

KENWORTH

TRUCKS ★ BUSES

FACTORY AND HOME OFFICE: SEATTLE, U. S. A., DISTRIBUTORS IN THE UNITED STATES AND MOST FOREIGN COUNTRIES

New Product Descriptions

Continued from Page 170

terchangeable with standard forks and other attachments.

The shovel is constructed of ¼-in. steel-plate with a ½-in. steel center-reinforcing plate running from top to bottom. The leading edge is a 5-in. wide blade of specially-hardened steel welded in place. The unit may be obtained in width of 38-in. to 72-in.; capacities range from 8 cu ft to 15 cu ft. Clarke Equipment Co., Industrial Truck Div., Battle Creek, Mich.

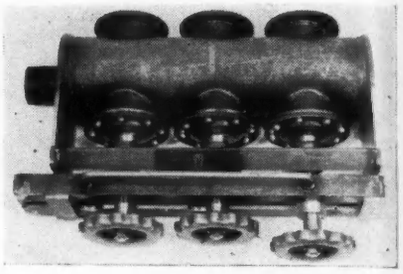
P234. Fork Truck

An electric, battery-powered "Truc-loader," 1000-lb. forklift truck features automatically accelerated control as standard equipment, "dead man" brake operated off the drive shaft of the drive motor, maximum accessibility for easy service and maintenance.

An improvement claimed is the use of a separate motor to provide power for the hydraulic pump. Clark Equipment Co., Industrial Truck Div., Battle Creek, Mich.

P235. Selective Manifold

A new selective manifold for use on petroleum tank trucks and trailers features a sliding bar which cannot be moved from one valve to another unless all the valves are closed.



When the bar is moved to a valve, that is the only valve that can be opened. The valve must be closed before the sliding bar can be moved again.

The manifold is available in 2-, 3-, and 4-in. sizes. Betts Machine Co., Warren, Pa.

P236. Axle Tilt Trailers

Three new tandem axle semi-trailers with tilting platforms, in 13-, 16-, and 20-ton capacities, are easily loaded and unloaded by one man, without use of skids or blocks. Two double-acting hydraulic cylinder cushion the 96-in. wide trailer platform, while it is being tilted. A pair of chains prevent the cylinders from becoming over-extended during tilting.

The 13- and 16-ton units come equipped with standard lunette for towing with standard pintle hook. The 20-ton trailer requires a special hitch. La-Cross Trailer Corp., La Cross, Wis.

P237. Seat Cushions

Seat cushions for trucks and buses, made of Goodyear Airfoam, are said to require no repairs, to be dust, germ and moth proof, to provide for greater driver comfort. Airfoam, made from latex, is honeycombed with tiny inter-

(TURN TO PAGE 174, PLEASE)

For Dock Spotters Only!

The NEW IMPROVED Hydraulic Lifting 5th Wheel
Eliminates Cranking While Spotting—Cab Controlled.
No Climbing In and Out of Cabs—Cuts Spotting Time to ⅓
Lifts Supports 14 inches Off the Ground
Does the Work of an Extra Man!

ALSO COUPLES TO FULL AUTOMATIC (COMMON) AND ELIMINATES FURTHER USE OF THEM . . . .

Takes the Hard Work Out of Spotting

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Local franchises available. Establish new business. Visit one of 60 successful units now operating. Income as high as $240. daily. Millions of Venetian blinds need laundering in our patented machine. Price $6750.—24 mo. to pay. Free booklet. C. X. Equipment Co., Inc., 101 S. 44th St., Phila. 4, Pa.

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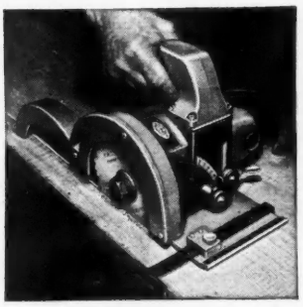

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SPECIAL FEATURES

- Modern Design
- Helical Gear Drive
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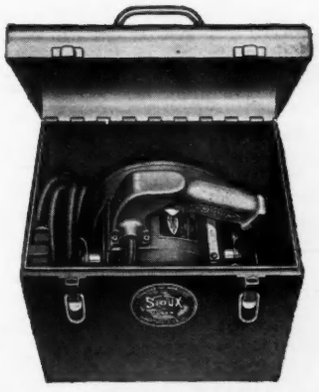
- Adjustable Rip Scale Guide
- Perfect Balance
- True One-Hand Operation
- Standard Round Hole Blades
- Exceptional Performance



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TR-4 Leverage bar with socket for GMC, Reo and Federal wheels.
They're "Job Designed"
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AUTOMOTIVE CABLE
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Both "V" TYPE and ONE WAY BLADE TYPE
hand or power hydraulic control
FOR ALL MOTOR TRUCKS FROM 1½ to 10 TONS
FRINK SNO-PLOWS, INC., CLAYTON, 1000 Isl., N.Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

New Product Descriptions

Continued from Page 174

heat expansion. The unit is adjustable to handle brake shoes from 9 to 12 in. in diameter. A selector switch brings heat high enough to carbonize the old bond for removal of the old lining. Available in single-, two-, and four-shoe models. Barrett Equipment Co., St. Louis, Mo.

P239. Crankcase Drainer

The "Drain-All," a crankcase drainer, makes possible oil changes while attendant fills vehicle's gas tank. Its vacuum operation draws the oil from the crankcase into a five-gal container through a tube inserted into the oil measure opening.

The unit is completely air operated, portable and weighs 11 lb. K-P Mfg. Co., Minneapolis, Minn.

P240. Loading Platform

This device called the "Make-It-Evener," levels a loading platform with the height of a truck. Built into the loading platform like a hydraulic elevator, the movable platform is usually about 18 ft long by 6 ft wide. The inside end of the platform is held in position by a pivot, while the outer end is raised or lowered by hydraulic ram operated by electric-oil, air-oil, water or by hand. The capacity can be made to suit requirements up to 20,000 lb. Revolator Co., N. Bergen, N. J.

END

Please resume your reading on P. 88

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CLUTCH PLATES AND PARTS
CHASSIS PARTS
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